SERVICE INSTRUCTIONS

24L Integrity

Electronic Gas Instantaneous Water Heater

TM031

Revision: A

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875024

271024
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Safety Warning

The purpose of this service manual is to provide sufficient information to allow a person with the skills as required by the Regulatory Authorities to carry out effective repairs to a Rheem Instantaneous Gas Water Heater in the minimum of time.

Safety precautions or areas where extra care should be observed when conducting tests outlined in this service manual are indicated by print in ***bold italics*** and/or a warning symbol. Take care to observe the recommended procedure.

Certain diagnostic procedures outlined in these Service Instructions require "live" testing to be conducted. Personal Protective Clothing (PPE) shall be worn and an RCD shall be installed between the power point and 3-pin cord of the water heater to reduce the risk of electric shock.

If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

Introduction

The information provided in these instructions is based on the water heater being installed in accordance with the Installation Instructions provided with each water heater.

Should you require further technical advice on a Rheem Integrity Water Heater, contact your nearest Rheem Service Department where genuine replacement parts are also available.

Water Heater Model Identification

The identification numbers are designed to convey detailed information about the water heater to which it is attached. The model number consists of 6 digits and up to 3 letters.

8	7	1	024	N	F	-C

Model Number
8 - Rheem
2 - *Everhot

Location
7 - External

Ignition Type
1 - Electronic 60ºC Max temp
5 - Electronic 48ºC Max temp

Capacity
Nominal litres/minute @ 25 ºC rise

Gas Type
N - Natural
P - Propane

F - Frost protection fitted

Version
Internal Use Only

* Everhot version (2) to be considered same as Rheem (8) version for the purposes of this Service Manual.

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Specifications

Model		**871024N0 871024NF 871024NF-B 875024NF-B 871024NF-C 875024NF-C**	**871024PF 871024PF-B 875024PF-B 871024PF-C 875024PF-C**
Specification		Natural	Propane
Max hourly gas consumption (MJ/Hr)		188	188
Min hourly gas consumption (MJ/Hr)		22	22
Min inlet water pressure (kPa)		140	140
Max inlet water pressure (kPa)		1000	1000
Min inlet gas pressure (kPa)		1.13	2.75
Max inlet gas pressure (kPa)		3.5	3.5
Ignition System		Continuous Spark	
Power Consumption (Watts)	Standard	64	64
	With anti-frost*	146	146
Gas connection diameter (mm)		R¾/20	R¾/20
Water connection diameter (mm)		R¾/20	R¾/20
Relief Valve Pressure (kPa)		1750	1750
Accessories			
Kitchen Controller		Y	Y
Bathroom 1 Controller		Y	Y
Bathroom 2 Controller		Y	Y
Deluxe Kitchen Controller		Y	Y
Deluxe Bathroom 1 Controller		Y	Y
Deluxe Bathroom 2 Controller		Y	Y
Recess box		Y	Y
Pipe cover		Y	Y

* Maximum power consumption when anti-frost heaters are energised.

Burner Test Point Pressures		
Model	**871024 871024-B 875024-B**	**871024-C 875024-C**
Natural Gas		
Max burner gas test pressure (kPa)	0.71	0.912
Min burner gas test pressure (kPa)	0.15	0.17
Propane		
Max burner gas test pressure (kPa)	0.71	1.078
Min burner gas test pressure (kPa)	0.16	0.22

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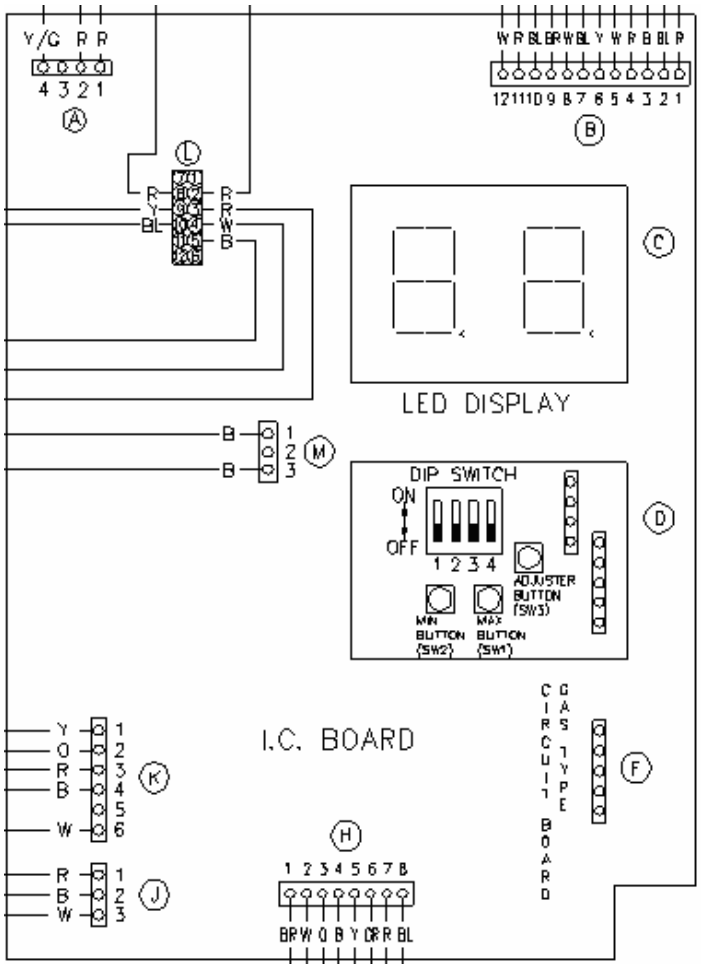
Preset Temperature Adjustment

It is possible to choose a preset outlet water temperature setting when remote controllers are not fitted. The water heater comes factory set at 50ºC on 871 series models or 48ºC on 875 series models.

Voltages up to 240 volts will be present within the water heater, take care not to touch wiring terminals. Use an insulated tool when operating the DIP switch or MIN and MAX buttons.

To adjust the preset temperature:

1. Remove the front cover from the water heater.
2. Turn DIP SWITCHES 3 and 4 on (up position) on the I.C. Board. The current preset temperature is displayed on the LED.
3. Press the MIN or MAX button, located under the DIP Switches, until the desired temperature is displayed. Available temperatures are:
   871 series models: 40ºC, 43ºC, 50ºC, 55ºC and 60ºC
   875 series models: 40ºC, 43ºC and 48ºC
4. Turn DIP SWITCHES 3 and 4 off (down position). The temperature display is now turned off.
5. Refit the front cover to the water heater.



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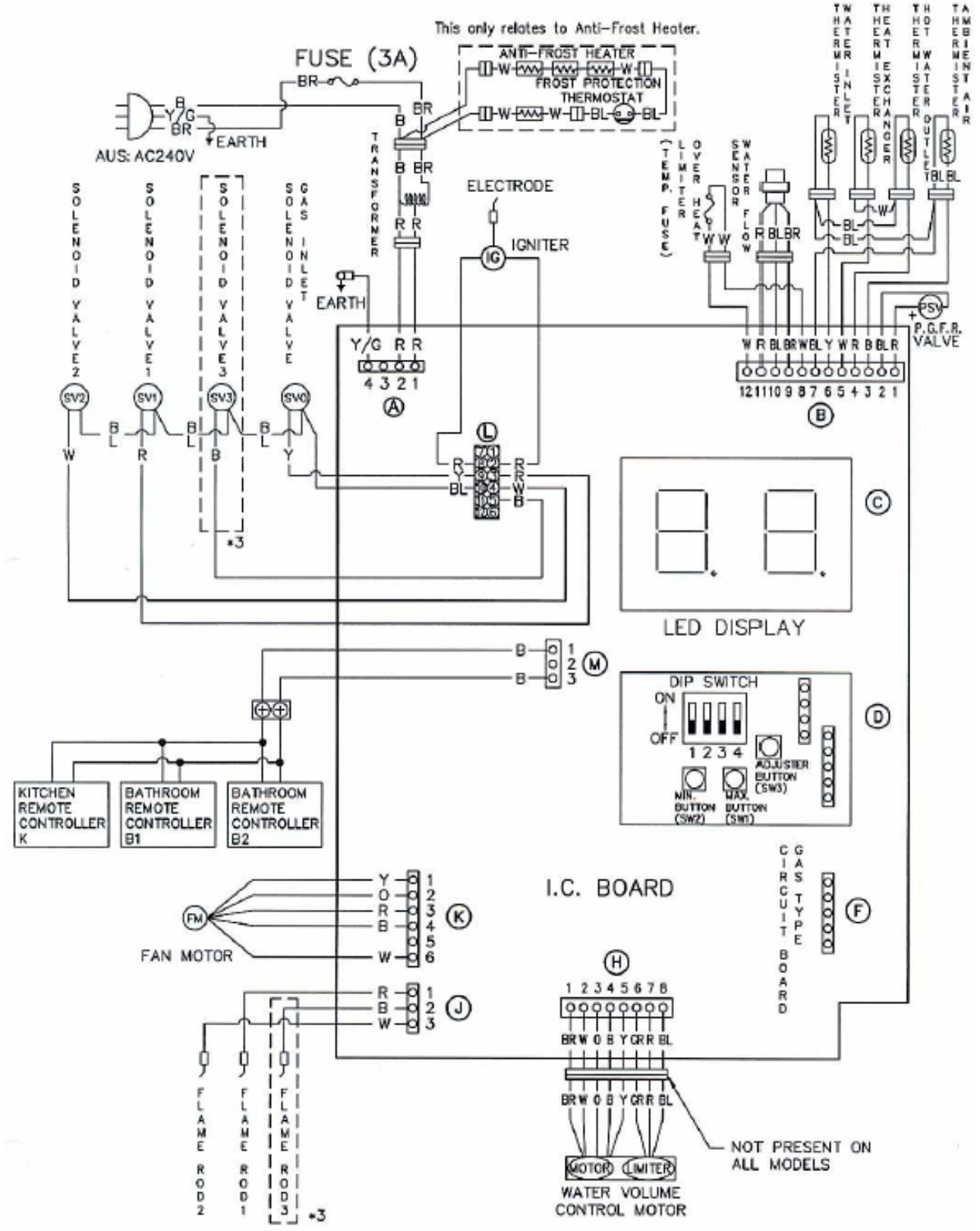
Wiring Diagram - Models with Mechanical Bypass



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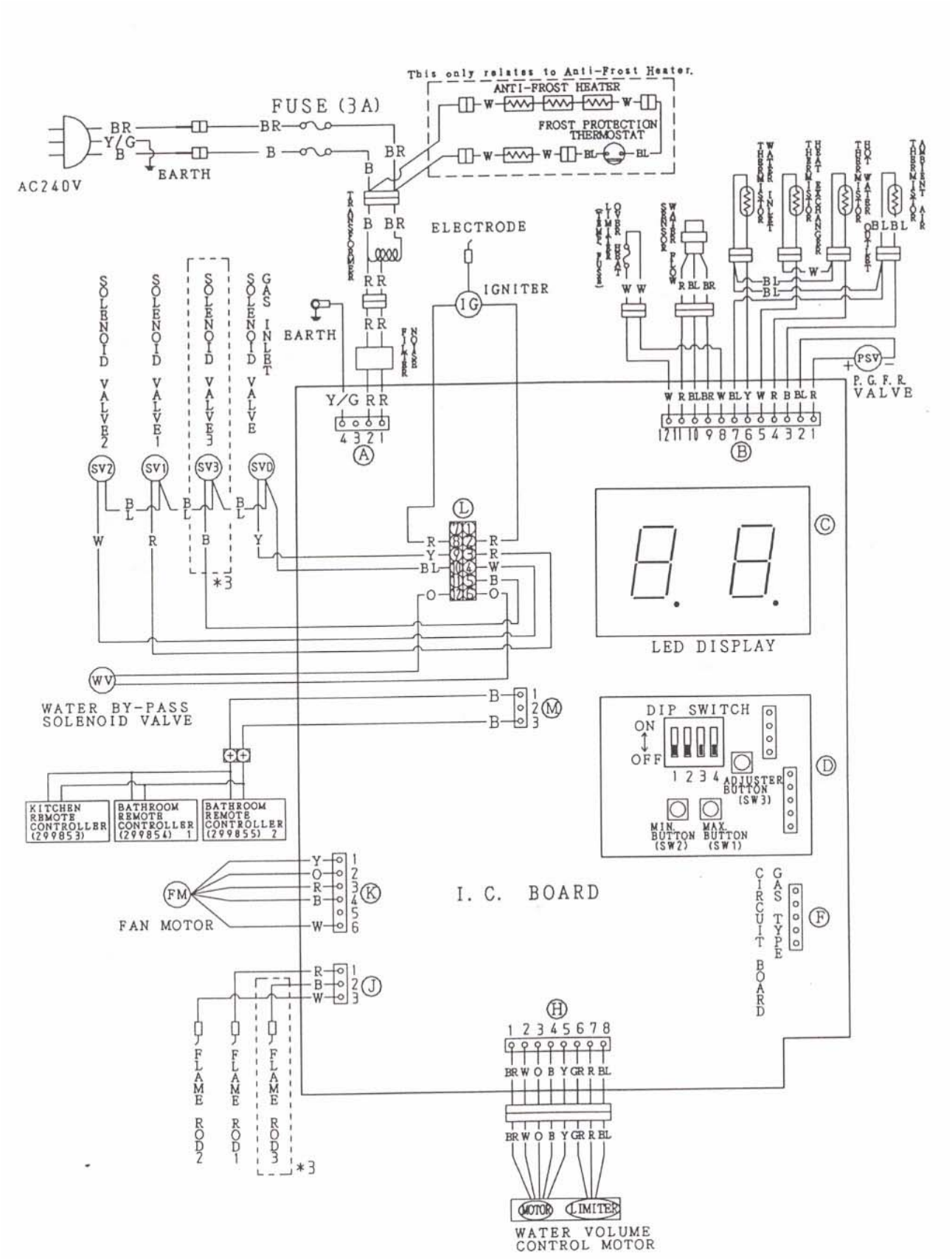
Wiring Diagram - Models with Solenoid Operated Bypass



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Sequence of Operation

Refer to 'Sequence of Operation Component Diagram' on page 9 to view components shown in brackets e.g. **(1)**

1. When a hot water tap **(1)** is opened, cold water (or preheated water if a solar preheater is installed) enters the water heater and passes through the Water Flow Sensor **(3)** and Heat Exchanger **(19)**. Note: For 871024 and 871024-B model heaters fitted with a comparator the inlet water temperature must be less than or equal to 57ºC and for 871024-C models the inlet water temperature must be less than or equal to 58ºC and less than or equal to the set point temperature minus 2ºC for operation to occur past this point; otherwise water will pass straight through the heat exchanger and fan and burner operation will not occur (for more information on this subject refer to the section titled 'In-series Gas Boosting' on page 15).
2. The Water Flow Sensor **(3)** sends a pulse signal to the PCB **(27)**. Once the pulse signal reaches a pre designated frequency (at minimum flow rate) the PCB **(27)** activates the Fan Motor **(25)** and the Fan **(24)** starts rotating.
3. After the Fan **(24)** completes a pre purge, the Gas Inlet Solenoid Valve **(9)**, Gas Solenoid Valve 1 **(10)** and Gas Solenoid Valve 2 **(11)** open at the same time. The Proportional Gas Flow Regulating Valve **(13)** adjusts the gas flow rate to ensure adequate gas for ignition and gas is then supplied to the Burner **(15)**.
4. At the same time the Gas Solenoid Valves open the Igniter **(16)** starts sparking continuously and ignites the gas at the Burner **(15)**. After the flame sensor **(18)** detects burner flame, the Proportional Gas Valve **(13)** begins to control the gas flow rate. If there is a difference between the hot water temperature detected by the Hot Water Outlet Thermistor **(6)** and that set on the water heater or selected on the remote controller (if fitted) the PCB **(27)** adjusts the hot water temperature by opening and closing the Gas Solenoid Valves 1 **(10)**, 2 **(11)** and 3 **(12)** and adjusting the Proportional Gas Flow Regulating Valve **(13)**. The water flow rate is also adjusted via the Water Flow Servo Motor **(7)** to ensure the selected temperature of hot water is delivered.
5. As the gas flow rate, controlled by the Proportional Gas Flow Regulating Valve **(13)** changes the PCB **(27)** varies the speed of the Fan Motor **(25)** to maintain the correct air gas mix ratio.
6. When the hot tap **(1)** is closed, the pulse signal from the Water Flow Sensor **(3)** stops and the burner flame is extinguished by closing Gas Solenoid Valves 1 **(10)**, 2 **(11)**, 3 **(12)** and the Gas Inlet Solenoid Valve **(9)**. The post purge operation then commences.
7. Once the post-purge operation ends (up to 6 minutes) power to the Fan Motor **(25)** is cut and the Fan **(24)** stops.

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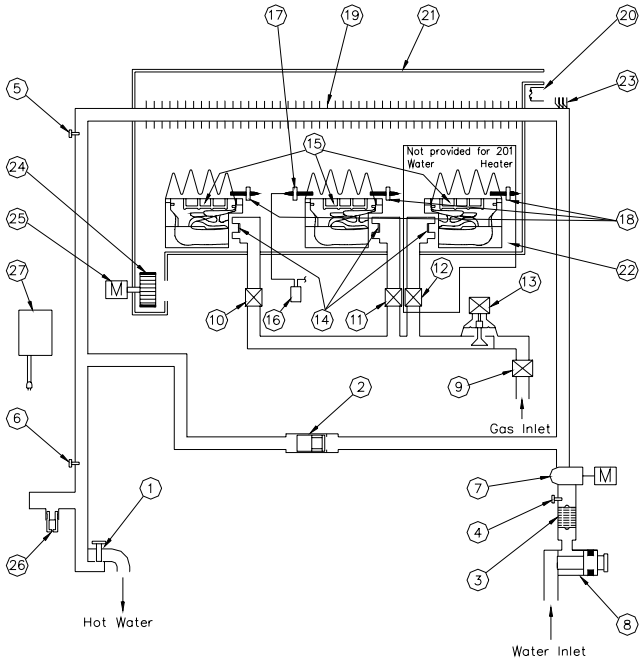
Sequence of Operation Component Diagram



1 Hot Water Tap
2 Bypass Control Valve
3 Water Flow Sensor
4 Inlet Water Temperature Thermistor
5 Combustion Chamber Thermistor
6 Outlet Water Temperature Thermistor
7 Water Flow Servo Motor
8 Water Filter (Strainer)
9 Gas Inlet Solenoid Valve
10 Gas Solenoid Valve 1
11 Gas Solenoid Valve 2
12 Gas Solenoid Valve 3
13 PGFR Valve
14 Nozzle
15 Burner
16 Igniter
17 Igniter Electrode
18 Flame Sensor
19 Heat Exchanger
20 Over Temperature Limiter
21 Exhaust (Flue) Outlet
22 Combustion Chamber
23 Anti Frost Heater (Models with F in model number only e.g. 871024NF)
24 Fan
25 Fan Motor
26 Drain Plug With Relief Valve.
27 PCB

Bypass Operation

The bypass is a section of copper pipe work connected between the water body assembly (effectively the cold water inlet) and the outlet of the heat exchanger and allows a quantity of cold water to bypass the heat exchanger. The purpose of the bypass is to ensure the heat exchanger operates at temperatures above the dew point of the combustion gases, ensuring condensate is not produced, but low enough to maximise the heat exchangers life. A valve fitted to the water body assembly controls the bypass. Two types of bypass valve are utilised in the 24 litre Integrity.

Mechanical Bypass

Models without a -B or -C suffix in the model number utilise a mechanical bypass e.g. 871024NF. The mechanical bypass is a small spring loaded valve located in the water body assembly. The spring is temperature sensitive, as the cold water temperature decreases the spring tension increases reducing the amount of cold water flowing through the bypass. The bypass operates at all times when water is flowing.

Solenoid Operated Bypass

Models with a -B or -C suffix in the model number utilise a solenoid operated bypass e.g. 871024NF-B. The solenoid operated bypass comprises a valve (located in the water body assembly) that is controlled by a solenoid (mounted on the water body assembly). The PCB activates the solenoid at the following predetermined temperatures:

Without Touch Pads: When the unit is preset at 40 or 43 degrees.

With Touch Pads: When temperatures from 37 to 46 degrees are selected.

At all other times the bypass does not operate.

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Anti-Frost Heater Circuit

Models with an 'F' in the model number have an anti frost heater circuit e.g. 871024N**F**-B. The anti-frost heaters are wired in series and operate independently from the water heater. The 24 litre models have an 82-watt anti-frost system.

A thermostat sensing ambient air temperature, positioned in the wiring loom near the bottom of the water heater, activates the anti-frost heaters when the ambient air temperature falls to 4ºC +4ºC/-2ºC and deactivates the anti-frost heaters when the temperature rises above 12ºC.

In the event a heater block becomes open circuit the total heater circuit is rendered inoperable. The total heater circuit measures 702.6 ohms.

The circuit is split into two sections with 4 heaters in total. To determine which section has failed, isolate the power to the water heater and unplug the wiring connectors at the thermostat, cord set and the water body assembly heater block. The heat exchanger and hot water outlet heater's resistance (3 heater blocks) is 565.5 ohms. The resistance of the water body assembly heater is 137.1 ohms. Refer to Procedure 10 on page 59 for replacement procedure.

Product Changes

Software Changes

Models manufactured after May 2006 have a change to the software which controls the operation of the heater. When an inlet water temperature of more than 58ºC and more than the set point temperature minus 2ºC is detected by the inlet water temperature thermistor, the fan and burner will not operate.

This function has been introduced to enhance the operation of the water heater and remove the need for a Solar Bypass Valve when the Integrity 24 is connected as an in-series gas booster to a solar water heating system (for more information refer to 'In-series Gas Boosting' on page 15).

Models with the revised software have a -C suffix added to the model number i.e. 871024NF-C.

Parts Replacement & Wiring Changes for 871024, 871024-B & 875024-B Model Heaters Only

Some parts for 871024, 871024-B & 875024-B model heaters have been superseded and are no longer available (refer to following tables). If any of these superseded parts are found to be faulty they must be replaced with current parts available for 871024-C and 875024-C model heaters.

Some current parts utilise different wiring connectors/connections necessitating the replacement of other interconnecting components when installed in 871024, 871024-B and 875024-B model heaters (refer to 'Parts Replacement Scenarios' on page 11). Part numbers shown in the following tables which are not marked with an asterisk (*) can be considered a direct replacement and require no additional components or modifications when installed in 871024, 871024-B and 875024-B model heaters.

Note: The parts lists shown on pages 64 - 75 are for current 871024-C and 875024-C model heaters; superseded part numbers for 871024, 871024-B and 875024-B model heaters are not shown therein however they are listed in the following tables.

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Item	Description	Superseded Model	Current Model
		871024 871024-B 875024-B	871024-C 875024-C
115	Nozzle Plate NG	N/A	31-76238-00
	Nozzle Plate LP	N/A	N/A
410	Water Body Assy	31-76285-00	31-76658-00
701	Overheat Limiter	54-02730-00	*31-79562-00
705	Anti-frost heater A	WH0020047	31-71644-00
706	Anti-frost heater B	WH0020048	31-71643-00
712	Thermistor (ambient air)	WH0020052	*Now part of item 758
713	Thermistor Outlet (B)	WH0020181	*20-64774-00
714	Anti-frost thermostat	WH0020054	20-57072-00
715	Thermistor HX	WH0020053	*Now part of item 758
717	Thermistor Inlet (A)	WH0020180	*20-64773-00
723	Hall IC Assy	31-28085-00	*20-43805-00
745	PCB	31-76604-0S	31-76623-0S
757	100V Line Cord	31-23674-00	31-76653-00
758	Signal Loom	WH0020067	*31-76655-00
773	Power Filter	WH0020079	*31-71642-00
780	Power cord	WH0020071	*31-76652-00
783	Transformer	WH0020073	*31-71646-00
784	Connecting Cord	31-23492-00	*31-71641-00

*When installed in 871024, 871024-B & 875024-B model heaters these parts will require the replacement of other interconnecting components. Refer to 'Parts Replacement Scenarios' on page 11 for more information.

871024 Models

Item	Description	Superseded Model		Current Model
		871024	871024-B	871024-C
001	Front Panel (NG & P)	31-76492-00		31-76496-00

875024 Models

Item	Description	Superseded Model	Current Model
		875024-B	875024-C
001	Front Panel (NG & P)	31-76566-00	31-76496-00

Parts Replacement Scenarios for 871024, 871024-B & 875024-B Model Heaters Only

When replacing any of the following parts in 871024, 871024-B or 875024-B models the additional components shown will also require replacing due to wiring/connection changes between superseded and current parts. **In some instances electrical BP connectors may be utilised instead of replacing the additional listed parts and in these cases this will be shown as an option.** Note: Item numbers refer to the item number on the exploded views and parts lists located on pages 64 - 75.

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Power Cord (item 780)

Old Part Number WH0020071 / New Part Number **31-76652-00**

This part may be connected to existing wiring utilising electrical BP connectors otherwise in addition to the power cord it will also be necessary to replace:

- Connecting Cord, Pt Nº 31-71641-00 (item 784)
- Transformer, Pt Nº 31-71646-00 (item 783)
- Power Filter, Pt Nº 31-71642-00 (item 773)
- Anti-frost heater A, Pt Nº 31-71644-00 (item 705)
- Anti-frost heater B, Pt Nº 31-71643-00 (item 706)
- Anti-frost thermostat, Pt Nº 20-57072-00 (item 714)

Transformer (item 783)

Old Part Number WH0020073 / New Part Number **31-71646-00**

This part may be connected to existing wiring utilising electrical BP connectors otherwise in addition to the transformer it will also be necessary to replace:

- Connecting Cord, Pt Nº 31-71641-00 (item 784)
- Power Cord, Pt Nº 31-76652-00 (item 780)
- Power Filter, Pt Nº 31-71642-00 (item 773)
- Anti-frost heater A, Pt Nº 31-71644-00 (item 705)
- Anti-frost heater B, Pt Nº 31-71643-00 (item 706)
- Anti-frost thermostat, Pt Nº 20-57072-00 (item 714)

Power Filter (item 773)

Old Part Number WH0020079 / New Part Number **31-71642-00**

This part may be connected to existing wiring utilising electrical BP connectors otherwise in addition to the power filter it will also be necessary to replace:

- Connecting Cord, Pt Nº 31-71641-00 (item 784)
- Power Cord, Pt Nº 31-76652-00 (item 780)
- Transformer, Pt Nº 31-71646-00 (item 783)
- Anti-frost heater A, Pt Nº 31-71644-00 (item 705)
- Anti-frost heater B, Pt Nº 31-71643-00 (item 706)
- Anti-frost thermostat, Pt Nº 20-57072-00 (item 714)

Connecting Cord (item 784)

Old Part Number 31-23492-00 / New Part Number **31-71641-00**

This part may be connected to existing wiring utilising electrical BP connectors otherwise in addition to the connecting cord it will also be necessary to replace:

- Power Filter, Pt Nº 31-71642-00 (item 773)
- Power Cord, Pt Nº 31-76652-00 (item 780)
- Transformer, Pt Nº 31-71646-00 (item 783)

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- Anti-frost heater A, Pt Nº 31-71644-00 (item 705)
- Anti-frost heater B, Pt Nº 31-71643-00 (item 706)
- Anti-frost thermostat, Pt Nº 20-57072-00 (item 714)

Ambient Air Thermistor (item 712)

The ambient air thermistor is now part of the signal loom (item 758). In replacing the loom the connectors on the replacement loom will now not fit any of the thermistors, water flow sensor or overheat limiter requiring replacement of those items as well.

Old Part Number WH0020052 / New Part Number **31-76655-00** (signal loom)

In addition to the signal loom it will also be necessary to replace:

- Inlet thermistor, Pt Nº 20-64773-00 (item 717)
- Heat Exchanger thermistor, now part of the signal loom Pt Nº 31-76655-00 (item 758)
- Outlet thermistor, Pt Nº 20-64774-00 (item 713)
- Overheat Limiter, Pt Nº 31-79562-00 (item 701)
- Flow Sensor, Pt Nº 20-43805-00 (item 723)

Heat Exchanger Thermistor (item 715)

The heat exchanger thermistor is now part of the signal loom (item 758). In replacing the loom the connectors on the replacement loom will now not fit any of the thermistors, water flow sensor or overheat limiter requiring replacement of those items as well.

Old Part Number WH0020053 / New Part Number **31-76655-00** (signal loom)

In addition to the signal loom it will also be necessary to replace:

- Inlet thermistor, Pt Nº 20-64773-00 (item 717)
- Ambient air thermistor, now part of the signal loom Pt Nº 31-76655-00 (item 758)
- Outlet thermistor, Pt Nº 20-64774-00 (item 713)
- Overheat Limiter, Pt Nº 31-79562-00 (item 701)
- Flow Sensor, Pt Nº 20-43805-00 (item 723)

Inlet thermistor (item 717)

Old Part Number WH0020180 / New Part Number 20-64773-00

In addition to the inlet thermistor it will also be necessary to replace:

- Signal Loom, Pt Nº 31-76655-00 (item 758)
- Ambient air thermistor, now part of the signal loom Pt Nº 31-76655-00 (item 758)
- Heat Exchanger thermistor, now part of the signal loom Pt Nº 31-76655-00 (item 758)
- Outlet thermistor, Pt Nº 20-64774-00 (item 713)
- Overheat Limiter, Pt Nº 31-79562-00 (item 701)
- Flow Sensor, Pt Nº 20-43805-00 (item 723)

Outlet Thermistor (item 713)

Old Part Number WH0020181 / New Part Number **20-64774-00**

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In addition to the outlet thermistor it will also be necessary to replace:

- Signal Loom, Pt Nº 31-76655-00 (item 758)
- Ambient air thermistor, now part of the signal loom Pt Nº 31-76655-00 (item 758)
- Heat Exchanger thermistor, now part of the signal loom Pt Nº 31-76655-00 (item 758)
- Inlet thermistor, Pt Nº 20-64773-00 (item 717)
- Overheat Limiter, Pt Nº 31-79562-00 (item 701)
- Flow Sensor, Pt Nº 20-43805-00 (item 723)

Overheat Limiter (item 701)

Old Part Number 54-02730-00 / New Part Number **31-79562-00**

In addition to the overheat limiter it will also be necessary to replace:

- Signal Loom, Pt Nº 31-76655-00 (item 758)
- Ambient air thermistor, now part of the signal loom Pt Nº 31-76655-00 (item 758)
- Heat Exchanger thermistor, now part of the signal loom Pt Nº 31-76655-00 (item 758)
- Inlet thermistor, Pt Nº 20-64773-00 (item 717)
- Outlet thermistor, Pt Nº 20-64774-00 (item 713)
- Flow Sensor, Pt Nº 20-43805-00 (item 723)

Flow Sensor (item 723)

Old Part Number 31-28085-00 / New Part Number **20-43805-00**

This part may be connected to existing wiring utilising electrical BP connectors otherwise in addition to the flow sensor it will also be necessary to replace:

- Signal Loom, Pt Nº 31-76655-00 (item 758)
- Ambient air thermistor, now part of the signal loom Pt Nº 31-76655-00 (item 758)
- Heat Exchanger thermistor, now part of the signal loom Pt Nº 31-76655-00 (item 758)
- Inlet thermistor, Pt Nº 20-64773-00 (item 717)
- Outlet thermistor, Pt Nº 20-64774-00 (item 713)
- Overheat Limiter, Pt Nº 31-79562-00 (item 701)

Signal Loom (item 758)

Old Part Number WH0020067 / New Part Number **31-76655-00**

In addition to the signal loom it will also be necessary to replace:

- Ambient air thermistor, now part of the signal loom Pt Nº 31-76655-00 (item 758)
- Heat Exchanger thermistor, now part of the signal loom Pt Nº 31-76655-00 (item 758)
- Inlet thermistor, Pt Nº 20-64773-00 (item 717)
- Outlet thermistor, Pt Nº 20-64774-00 (item 713)
- Flow Sensor, Pt Nº 20-43805-00 (item 723)
- Overheat Limiter, Pt Nº 31-79562-00 (item 701)

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Temperature controllers must not be fitted if this water heater is installed as part of a solar water heater system because water at a temperature much higher than the controller setting can be delivered.

If a solar pre-heater has been installed to an existing Integrity water heater installation then a solar bypass valve or a comparator must be fitted at this water heater and any controllers, if fitted, must be disconnected and removed. Note: models ending with -C do not require a solar bypass valve or a comparator.

875 series models are not suitable for use as in-series gas boosters.

871024-C Models

Where an 871024-C model Integrity is installed to provide in-series gas boosting a solar bypass valve or a comparator is not required. 871024-C models have had a change made to the operating software which eliminates the need for either of these components.

The software now electronically mimics a bypass valve so that when the inlet water temperature is above 58°C the fan and burner will not operate despite water flowing through the heat exchanger. When the inlet water temperature is less than or equal to 58°C the burner will fire and boost the outlet temperature to 60°C provided the flow rate is greater than 3 litres per minute. 24L models with modified software can be identified by a C suffix in the model number i.e. 871024NF-C.

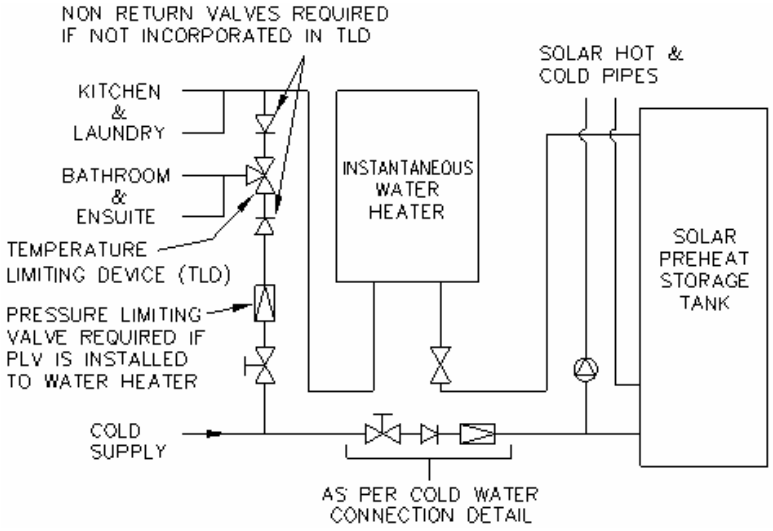
The preset outlet temperature of the Integrity, when installed as an in-series gas booster to a solar water heater, must be set at 60°C for the system to operate correctly.

The factory preset outlet temperature of all Integrity models is 50°C; during a new installation it will be necessary to reset the outlet temperature to 60°C. Refer to page 5 for details on checking and adjusting the outlet temperature.

Note: If an 871024 or 871024-B model heater is replaced with an 871024-C model heater and the existing 871024 or 871024-B heater is used as an in-line booster and has a solar bypass valve fitted, the solar bypass valve must be removed and the plumbing connections remade directly to the Integrity inlet and outlet water connections (refer to diagrams on pages 15 & 16).

In-series Gas Boosting 871024-C Solar Loline Installation

Note: This plumbing diagram is also applicable to 871024 & 871024-B model heaters fitted with a comparator.
For more information on comparators refer to page 17.


NON RETURN VALVES REQUIRED IF NOT INCORPORATED IN TLD
SOLAR HOT & COLD PIPES
KITCHEN & LAUNDRY
BATHROOM & ENSUITE
TEMPERATURE LIMITING DEVICE (TLD)
PRESSURE LIMITING VALVE REQUIRED IF PLV IS INSTALLED TO WATER HEATER
INSTANTANEOUS WATER HEATER
SOLAR PREHEAT STORAGE TANK
COLD SUPPLY
AS PER COLD WATER CONNECTION DETAIL

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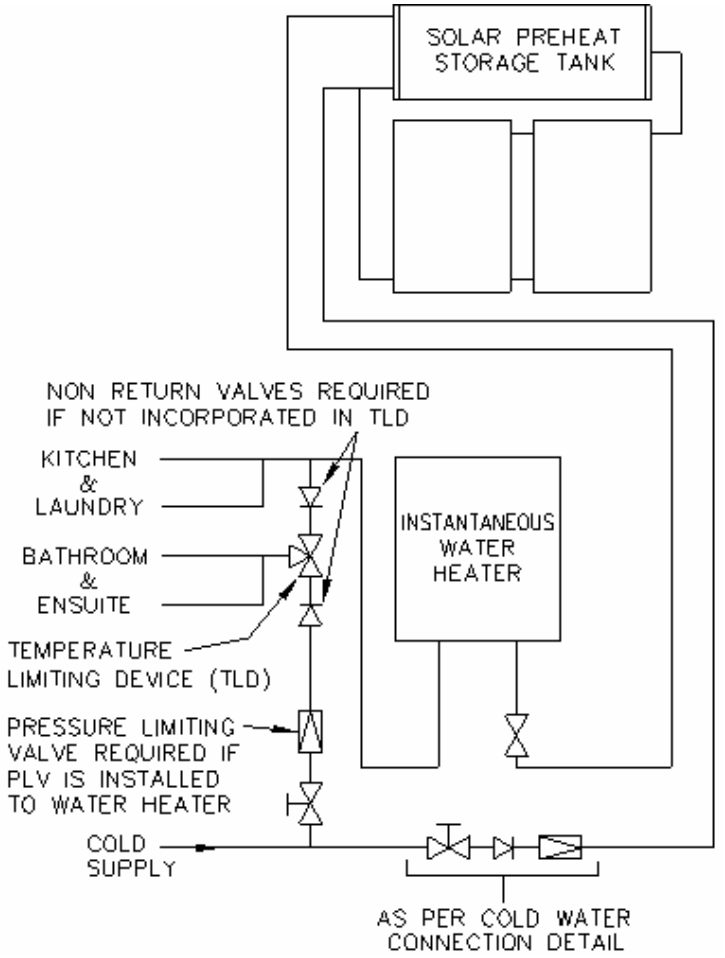
871024-C Solar Hiline Installation

Note: This plumbing diagram is also applicable to 871024 & 871024-B model heaters fitted with a comparator. For more information on comparators refer to page 17.


SOLAR PREHEAT STORAGE TANK
NON RETURN VALVES REQUIRED IF NOT INCORPORATED IN TLD
KITCHEN & LAUNDRY
BATHROOM & ENSUITE
TEMPERATURE LIMITING DEVICE (TLD)
PRESSURE LIMITING VALVE REQUIRED IF PLV IS INSTALLED TO WATER HEATER
COLD SUPPLY
INSTANTANEOUS WATER HEATER
AS PER COLD WATER CONNECTION DETAIL

871024 & 871024-B Models

Where an 871024 or 871024-B model Integrity is installed to provide in-series gas boosting a solar bypass valve is fitted across the Integrity inlet and outlet water connections to prevent the water heater from operating when the outlet water temperature from the solar system is above 57°C (refer to diagrams on page 17). A disconnection union must always be provided at the solar preheated water inlet and hot water outlet on the solar bypass valve to allow for removal of the valve.

The solar bypass valve has been specifically designed to work with Rheem Integrity 871024 and 871024-B models heaters. Models ending with -C do not require a bypass valve. 875 series water heaters are not suitable for use as in-series boosters.

The preset outlet temperature of the Integrity, when installed as an in-series gas booster to a solar water heater, must be set at 60°C for the system to operate correctly.

The factory preset outlet temperature of all Integrity models is 50°C; during a new installation it will be necessary to reset the outlet temperature to 60°C. Refer to page 5 for details on checking and adjusting the outlet temperature.

There are two types of solar bypass valves currently in use (Paloma & RMC) and whilst both operate in the same manner the plumbing arrangement at the valve differs according to the type of solar bypass valve used (refer to diagrams on page 17). Solar bypass valves are no longer available and if faulty are to be removed and a Comparator installed. Refer to pages 17 & 18 for information on comparators.

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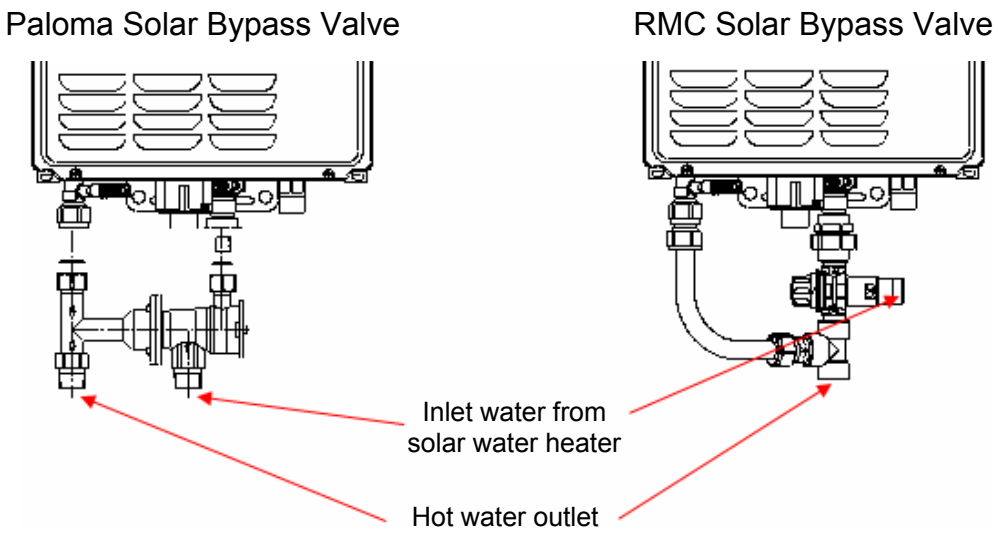

Note: If an 871024 or 871024-B model heater is replaced with an 871024-C model heater and the existing 871024 or 871024-B heater is used as an in-line booster and has a solar bypass valve fitted, the solar bypass valve must be removed and the plumbing connections remade directly to the Integrity inlet and outlet water connections (refer to diagrams on pages 15 & 16).

Solar Bypass Valve Operation

When the water temperature entering the solar bypass valve is above 57°C a temperature sensitive mechanism moves the valve spindle preventing water from entering the Integrity and allowing the water to flow through the solar bypass valve to the hot water outlet.

If the water temperature from the solar storage tank entering the solar bypass valve is below 57°C the temperature sensitive mechanism retracts the valve allowing water to enter the Integrity and preventing flow through the solar bypass valve. The Integrity will boost the water temperature to 60°C at the hot water outlet provided the flow rate is greater than 3 litres per minute.

Replacement of Solar Bypass Valve with a Comparator

An electronic device called a Comparator (part number 052127) is now available to replace the solar bypass valve and is suitable for use on Rheem 871024 and 871024-B models heaters. **NOTE:** 24L models with a C suffix in the model number do not require either a solar bypass valve or a comparator.

Solar bypass valves are no longer available and if faulty are to be removed and a Comparator installed. Refer to page 18 for the procedure on installing a comparator.

The purpose of the comparator is to interrupt the operation of the burner when the inlet water temperature rises above 57°C.

The comparator is connected to the water flow sensor wiring and the inlet temperature sensor (cold sensor) wiring; both these components are mounted on the water body within the gas booster. The comparator monitors the inlet water temperature and when the temperature rises above 57°C the comparator interrupts the signal from the flow sensor to the PCB causing the burner to shut down.

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Removing a Solar Bypass Valve and Installing a Comparator

1. Ensure power and water to the water heater is isolated.
2. Remove the front cover (refer to component procedure 1 on page 56).
3. Locate the 2 pin wiring plug in the wiring loom to the cold sensor mounted on the water body (refer to fig 1) and disconnect.

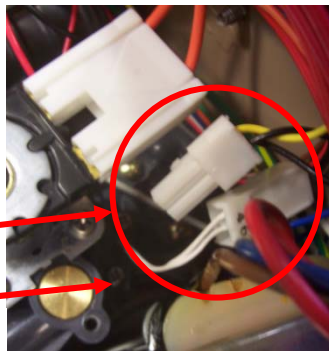

Fig 1

4. Plug the 2 pin male and female connectors from the comparator into the plugs attached to the cold sensor and the main wiring loom (refer to fig 2). **NOTE:** If the comparator connectors do not fit the cold sensor and main wiring loom plugs the model is an 871024-C model which does not require a comparator.

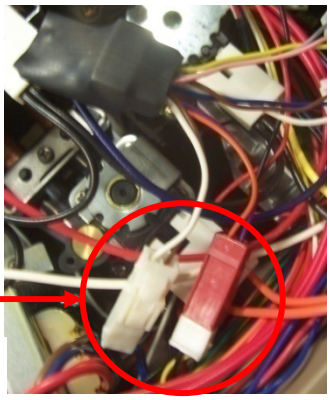

Fig 2

5. Locate the 3 pin wiring plug in the wiring loom to the flow sensor (refer to fig 3) and disconnect

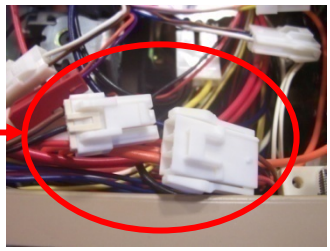

Fig 3

6. Plug the 3 pin male and female connectors from the comparator into the plugs attached to the flow sensor and the main wiring loom (refer to fig 4).

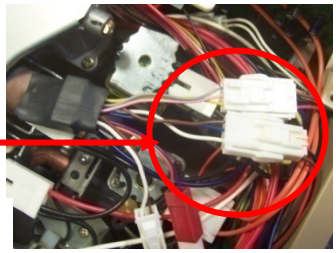

Fig 4

7. Position and secure the comparator in a safe position using the existing wiring ties securing the wiring loom (refer to fig 5).

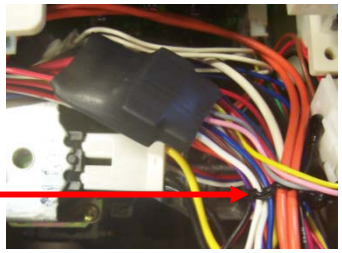

Fig 5

8. Refit the front cover.
9. Remove the bypass valve and associated fittings and connect the inlet and outlet pipe work directly to the gas booster. **NOTE:** This may require the pipe work to be extended; unions must be used at the inlet and outlet to enable removal of the gas booster for serving if required (refer to diagrams on pages 15 & 16).
10. Restore water and power supplies.

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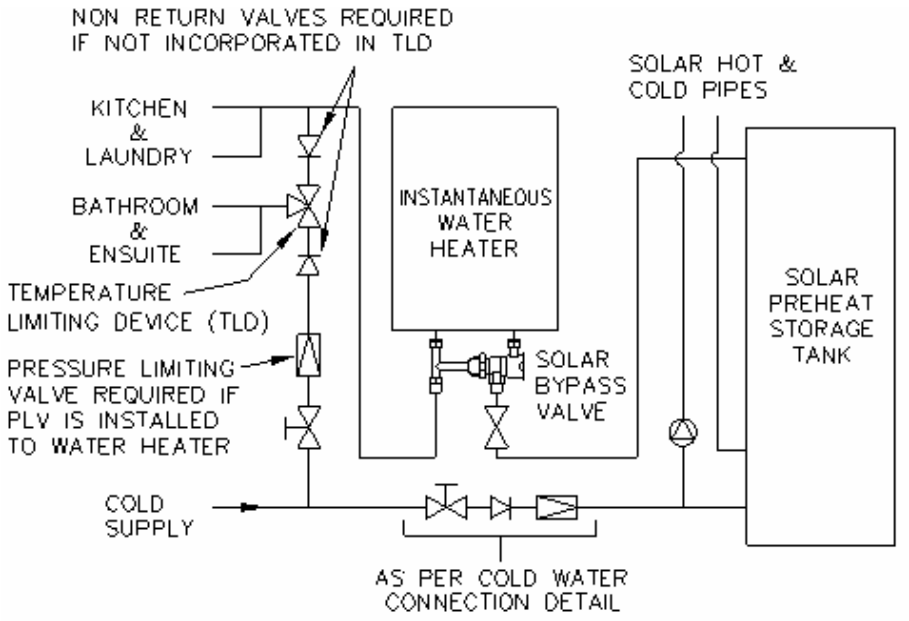
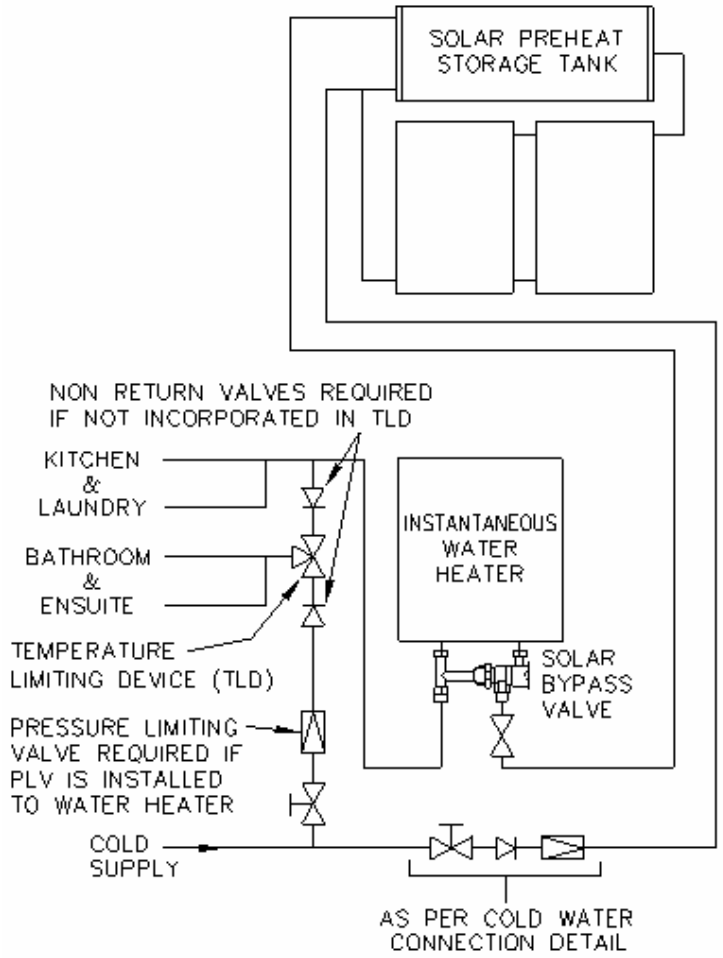
In-series Gas Boosting 871024 & 871024-B Solar Loline Installation



Note: For 871024 & 871024-B model heaters fitted with a comparator refer to diagram on page 15. For more information on comparators refer to page 17.

In-series Gas Boosting 871024 & 871024-B Solar Hiline Installation



Note: For 871024 & 871024-B model heaters fitted with a comparator refer to diagram on page 15. For more information on comparators refer to page 17.

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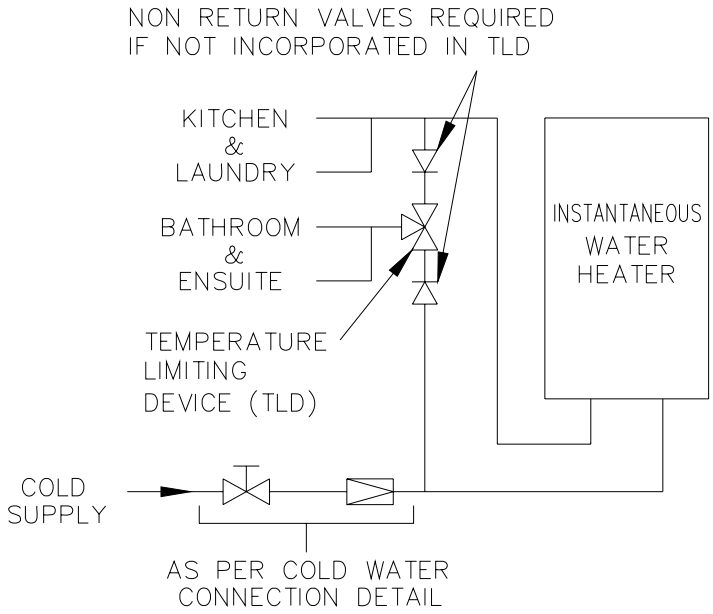
Tempering Valves

875 series models comply with AS/NZS 3498 and therefore do not require a tempering valve.

On 871 series models where a tempering valve is fitted and there is not a separate untempered line for the kitchen or laundry areas, the Kitchen temperature controller will be able to display temperatures above 50°C however the delivered water temperature at the tap will be that set by the tempering valve which will be no hotter than 50°C.

To enable delivery of hot water at temperatures above 50°C a separate untempered line must be provided that supplies hot water exclusively to kitchen and laundry areas (refer to diagram below).



Remote Controllers

The Integrity 24 electronic instantaneous gas water heater can be fitted with optional remote controllers.

There are 2 types of controller that can be used, standard or deluxe.

Controller Type	Bathroom 1 Controller	Bathroom 2 Controller	Kitchen Controller	Kitchen Cable 20m	Bathroom Cable 20m
Standard	299854	299855	299853	299856	299857
Deluxe	299859	299860	299858		

Standard and deluxe controllers **cannot** be mixed in a single installation; an individual water heater must have ALL standard or ALL deluxe type controllers fitted, other manufacturers' controllers cannot be used.

Standard controllers may be used with any 24 litre integrity model however deluxe controllers can only be used with models that have a -B or -C suffix in the model number e.g. 871024NF-B.

Deluxe temperature controllers offer additional functions compared to standard temperature controllers:

- A Bath-Fill auto-stop function allows the bath-fill volume and temperature to be set, once the selected volume of water has passed through the water heater the water servo motor closes, preventing any further flow of hot water.

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- An Assistance call button provides a voice or alert tone when pressed that is audible on all controllers.

One, two or three controllers can be installed, however if a Bathroom controller is installed without a Kitchen controller then the maximum selectable hot water temperature will be limited to 50°C when connected to an 871 series model or 48°C when connected to an 875 series model.

875 series models are factory set and limited so that they cannot deliver water hotter than 48°C.

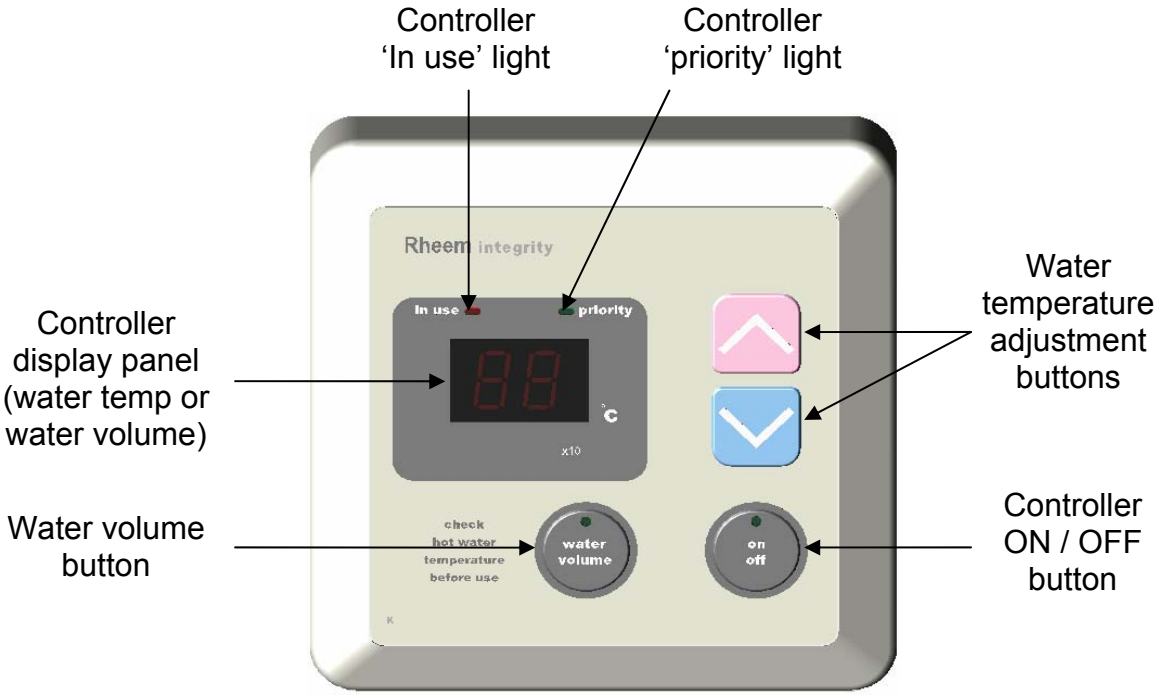
When no hot water is flowing, temperatures can be selected between 37°C and 43°C by pressing and holding the temperature control buttons, to select temperatures above 43°C press the temperature control button once for each selection.

A controller must be turned on and must display the 'ACTIVE' indicator in order to allow adjustment of water temperature.

When hot water is flowing, the temperature can be increased from 37°C to 43°C only.

The water temperature can be decreased from any setting whether hot water is flowing or not.

Standard Controller



Note: If one or more controllers are installed, at least one must be on for the water heater to operate. If all controllers are off the water heater will only deliver cold water.

Selectable Temperatures:

Kitchen Controller:
37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 50*, 55*, 60°C*

Bathroom Controllers:
37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 50°C*

* Temperatures above 48 degrees are not available on controllers fitted to 875 series models as these units have a maximum selectable temperature of 48°C at all locations.

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ON / OFF button	This button must be pressed once to turn on the controller. The light in the button will glow when the controller is on. A controller cannot be turned on if water is flowing from a hot tap. To turn off a controller, press the on / off button once. The light will go out. A controller can be turned off whilst water is flowing.
Priority light	This light will glow on a controller when that controller has priority. The Bathroom controller(s), if they are turned on, have priority over the Kitchen controller. Priority means that controller has control of the water heater temperature setting. The water temperature setting can only be adjusted by the controller that has priority.
In use light	This light will glow on all controllers, whether they are on or off, when hot water is flowing, regardless of which controller has priority.
Display panel	The current temperature setting is displayed on all controllers (whether hot water is flowing or not), when any controller is on. If all controllers are off, then the display remains blank. The water volume can also be displayed on the Kitchen controller. The x10*l* symbol glows when the water volume is displayed.
▲ (up button)	The up button increases the temperature setting.
▼ (down button)	The down button decreases the temperature setting.
water volume button	(Kitchen controller only) – This feature enables an alarm to sound when a set volume of water has flowed through the water heater (refer to notes below).

Water volume notes:

- The water volume function is designed to warn, by a beeping sound, that a certain volume of water has been delivered from the water heater. **It does not stop either the flow of or the heating of water.**
- The Kitchen controller does not require priority nor to be on in order to set the water volume function.
- The water volume function can be set whilst a hot tap is open.
- The water volume alarm will only sound from the kitchen controller.
- The factory preset water volume is 180 litres.
- To turn off the water volume function before the alarm sounds, press the water volume button twice.
- The water volume is measured as the water flows through the water heater. Therefore if more than one hot tap is open, the alarm will respond to the total water volume drawn from all taps and the expected water volume from the first tap will be decreased.
- If the hot tap is closed before the set water volume flows through the water heater and the water volume button is left on, then the alarm will sound when the remaining water volume is consumed during a later operation. To prevent the alarm from sounding, press the water volume button twice to turn it off.

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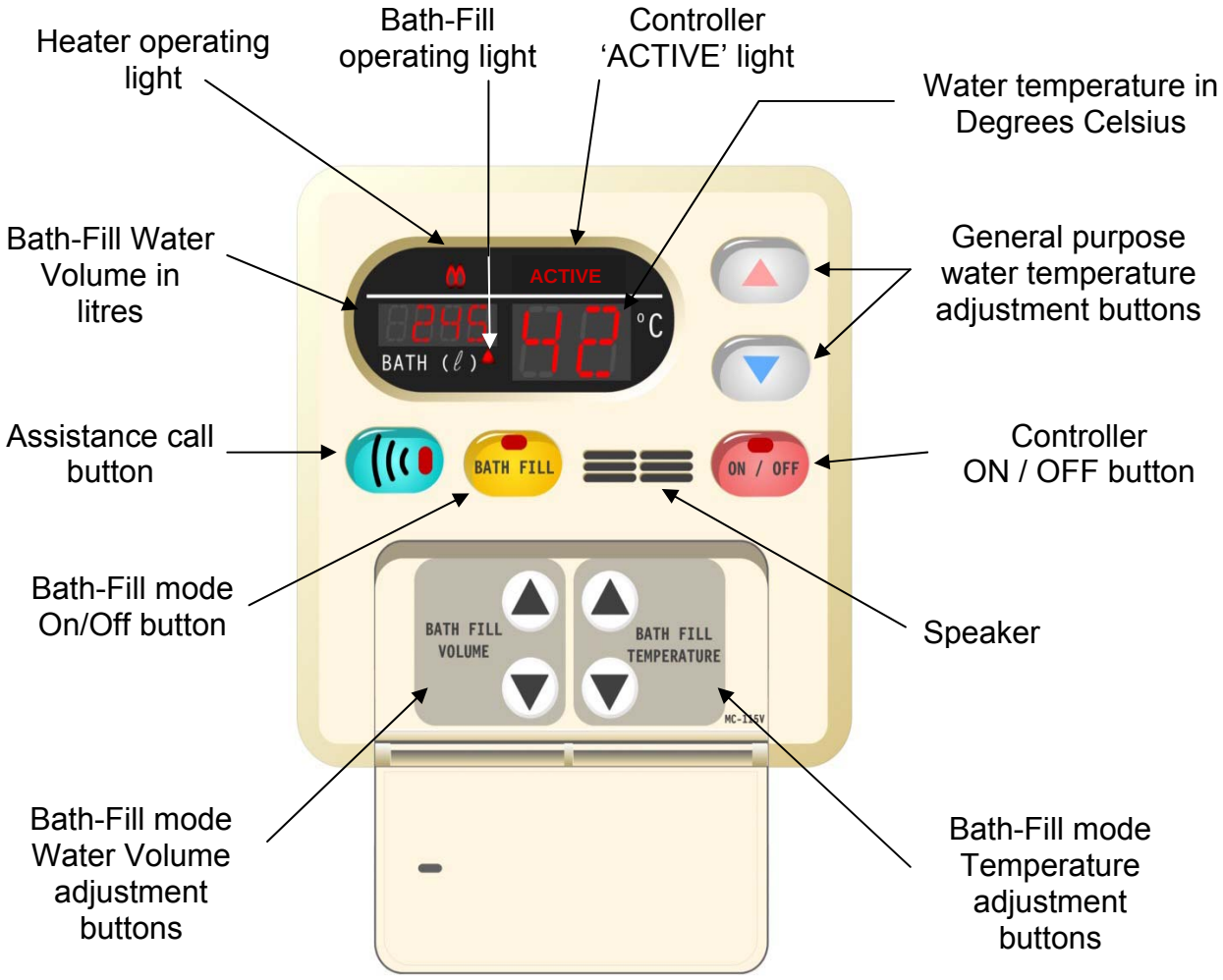
Deluxe Controller
(Shown with Bath-Fill control cover open)



Note: If one or more controllers are installed, at least one must be on for the water heater to operate. If all controllers are off the water heater will only deliver cold water.

Selectable Temperatures:

Deluxe Kitchen Controller:
37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 50*, 55*, 60°C*

Deluxe Bathroom Controllers:
37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 50°C*

Bath-Fill Mode – All Deluxe Controllers:
37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48°C

* Temperatures above 48 degrees are not available on controllers fitted to 875 series models as these units have a maximum selectable temperature of 48°C at all locations.

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Deluxe Controller Functions

ON / OFF button	Press once to turn on the controller. The button will glow when the controller is on. A controller cannot be turned on if water is flowing from a hot tap. Press the button to turn off the controller. A controller can be turned off whilst water is flowing.
Bath-Fill button	Initiates Bath-Fill mode and once pressed will display the last used Bath-Fill water volume in litres and the last used Bath-Fill temperature in °C. The displayed Bath-Fill water volume and temperature can be adjusted by using the Bath-Fill water volume and temperature control buttons located beneath the hinged panel
Bath-Fill operating light	Illuminates whenever Bath-Fill mode is in operation.
Bath-Fill Temperature ▲ (up button)	Increases the Bath-Fill temperature setting.
Bath-Fill Temperature ▼ (down button)	Decreases the Bath-Fill temperature setting.
Bath Fill Water Volume ▲ (up button)	Increases the Bath-Fill water volume setting in increments of 10 litres up to 500 litres. A further setting of 990 litres can be selected
Bath Fill Water Volume ▼ (down button)	Decreases the Bath-Fill water volume setting
Assistance Call button	When pressed sounds a message or alert tone on the Kitchen Controller indicating that assistance is required in the bathroom.
Bath-Fill Water Volume display	Displays the selected Bath-Fill water volume in litres. The quantity of water can be adjusted using the Bath-Fill Water Volume adjustment buttons located beneath the hinged panel
Heater Operating light	Illuminates on all controllers when hot water is flowing
Heater ACTIVE light	Illuminates when that controller is 'active'. The Bathroom controller when turned on, have priority over the Kitchen controller. Priority means that a controller has control of the water heater temperature setting. The water temperature setting can only be adjusted by the controller that is displaying the ACTIVE message.
Temperature Display	Displays the current temperature setting on all controllers in °C when any controller is on. If all controllers are off the display remains blank.
▲ (up button)	Increases the general purpose temperature setting.
▼ (down button)	Decreases the general purpose temperature setting.

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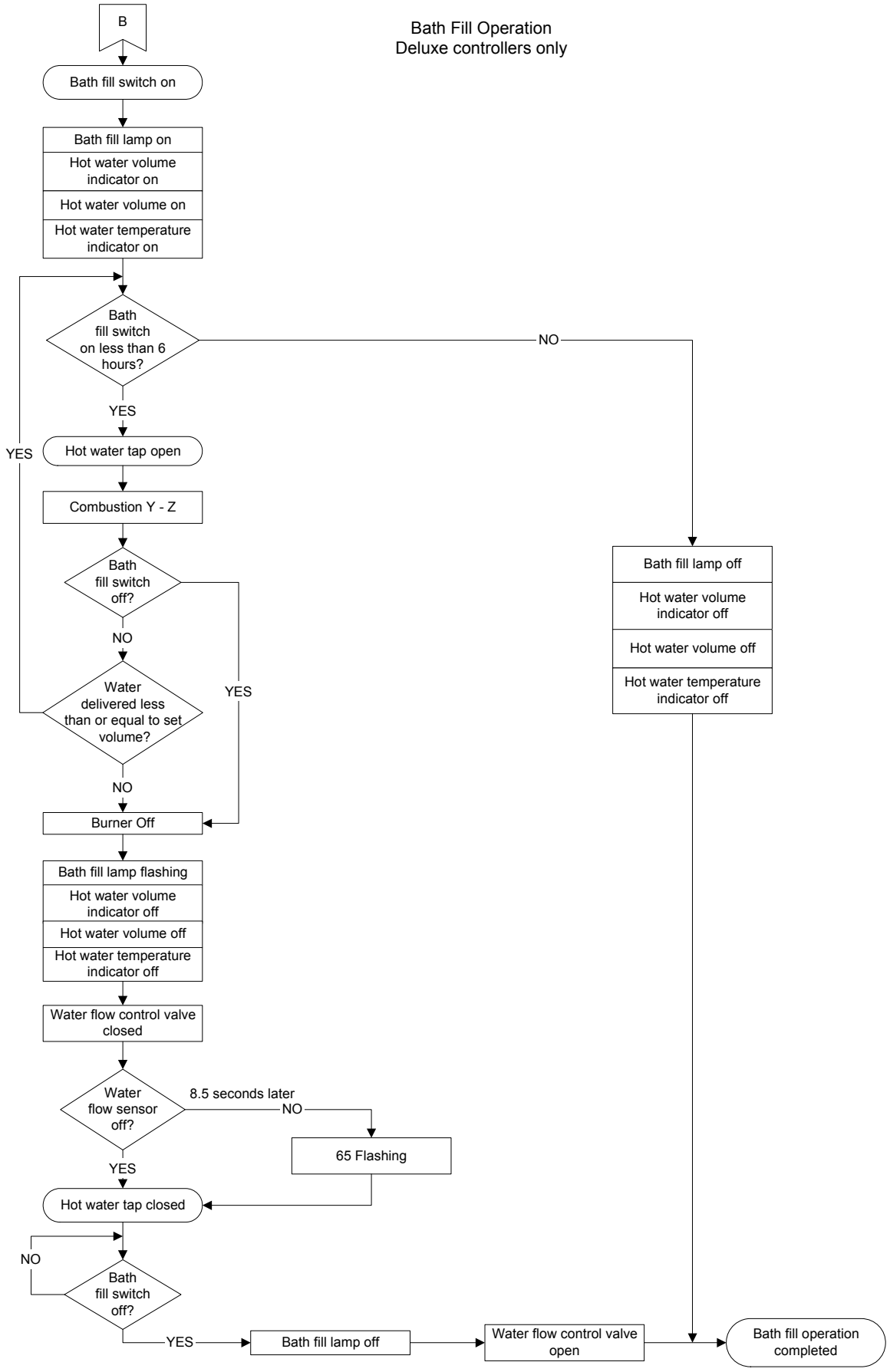
Bath Fill Operation



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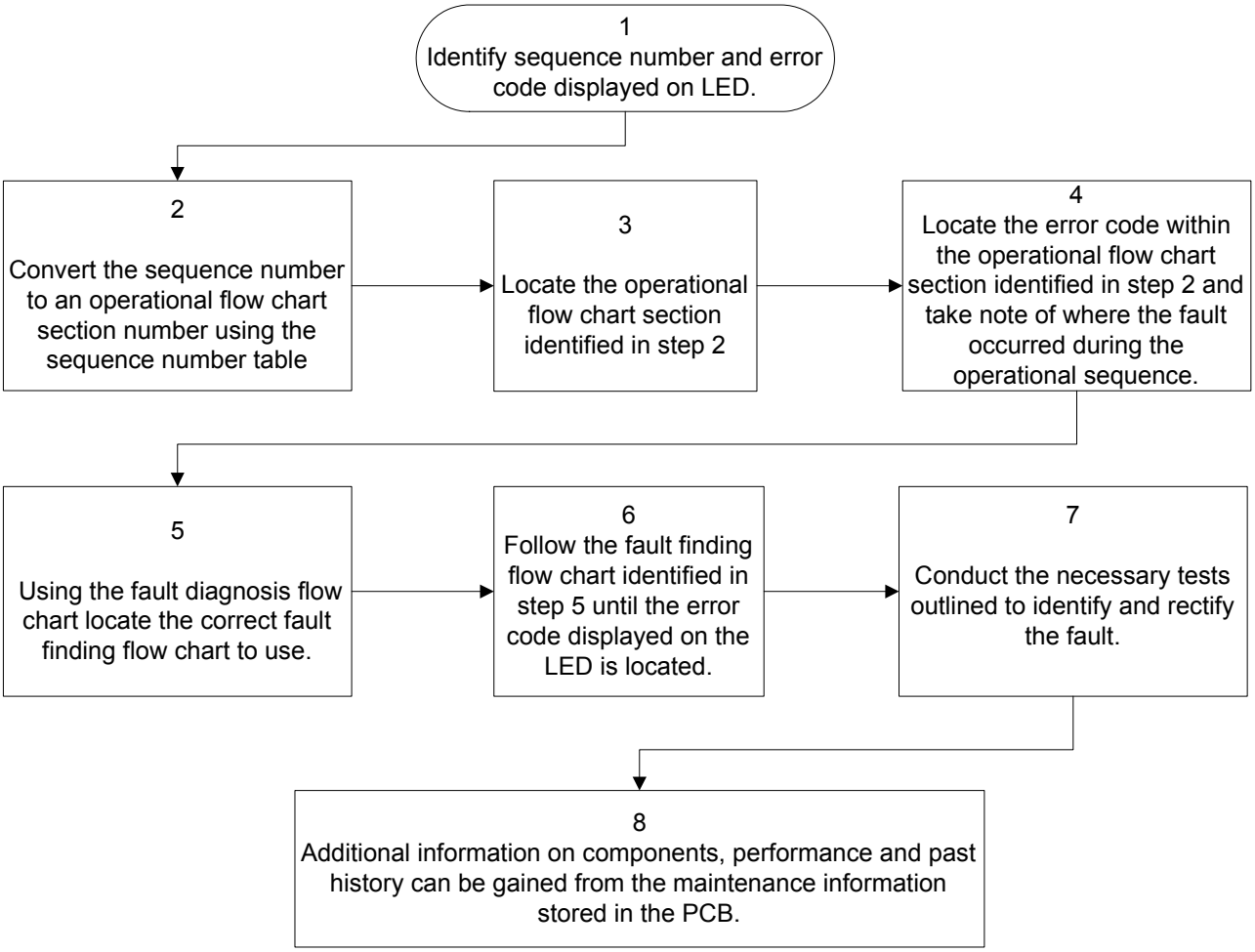
How to Fault Find

When conducting fault finding techniques it is important to understand that the same error code with a different sequence number can be displayed at different points during the operational sequence of the water heater. It is important to determine where the fault occurred in relationship to the operational sequence of the water heater before commencing fault finding tests, as the tests may differ even though the same error code can be displayed.

If a fault occurs the LED display will alternate between the error code for the fault and a sequence number that indicates where in the operational sequence of the water heater the fault occurred. The operational flow charts are broken into 5 sections designated by boxed numbers. The table on page 27 converts the sequence number displayed on the LED to the appropriate operational flow chart section.

The flow diagram below outlines the recommended procedure to successfully diagnose, test and rectify faults on the Integrity range of water heaters.


1
Identify sequence number and error code displayed on LED.
2
Convert the sequence number to an operational flow chart section number using the sequence number table
3
Locate the operational flow chart section identified in step 2
4
Locate the error code within the operational flow chart section identified in step 2 and take note of where the fault occurred during the operational sequence.
5
Using the fault diagnosis flow chart locate the correct fault finding flow chart to use.
6
Follow the fault finding flow chart identified in step 5 until the error code displayed on the LED is located.
7
Conduct the necessary tests outlined to identify and rectify the fault.
8
Additional information on components, performance and past history can be gained from the maintenance information stored in the PCB.

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About the Operational Flow Charts

The Operational Flow Charts provide information on the start up sequence and, in the event a failure occurs at any point of the start up sequence, what error code will be displayed.

When a fault occurs, an error code and sequence number will alternate in the LED display. The Sequence Number Table below indicates the section of the operational sequence (boxed numbers on the operational flow chart) where the fault occurred.

Circled numbers, adjacent to the component or function, indicate the diagnostic test point required to diagnose the fault. Refer to the table on page 32.

By locating the Error Code (displayed on the water heater or remote controller) in the diagnosis charts the component/s or fault can be quickly identified and tested using the diagnostic procedures outlined in this manual.

Notes and Abbreviations used on the Operational Flow Charts

P.G.F.R Valve	Proportional Gas Flow Regulating Valve	**I.C**	Integrated Circuit
G.I.S.V.	Gas Inlet solenoid Valve	**S.V. 1**	Solenoid Valve 1
O.H.L	Over Heat Limiter	**S.V. 2**	Solenoid Valve 2
C.I	Combustion Indicator	**S.V. 3**	Solenoid Valve 3
F.F	Flame Failure		

Stepping gas rate change sequence by solenoid

Model	Step 1	Step 2	Step 3	Step 4
24L	S.V. 1 ON	S.V. 2 ON	S.V. 1 & 2 ON	S.V. 1, 2 & 3 ON

Burner Configuration (Burner Change-Over Assembly)

Model	Burner 1	Burner 2	Burner 3
24L	Centre Solenoid (S.V. 1)	Left Solenoid (S.V. 2)	Right Solenoid (S.V. 3)

Sequence Number Table

Sequence Number	- 0 to -9	A0 - A9 P0 - P9	C0 - C9	E0 - E9	H0 - H9 L0 - L9 J0 - J9 U0 - U9
Operational Flow Chart Section	1	2	3	4	5

Test Equipment

A list of test equipment which will assist in conducting diagnostic procedures is provided below. This equipment is available from Rheem Service Spare Parts Department.

Flame detection simulator	WH0020080
Flame sensor current (uA) detection kit	WH0020081
Fine probe adapter kit	WH0020082
Heat exchanger fin brush	WH0020083
Probe to alligator clip kit	WH0020084

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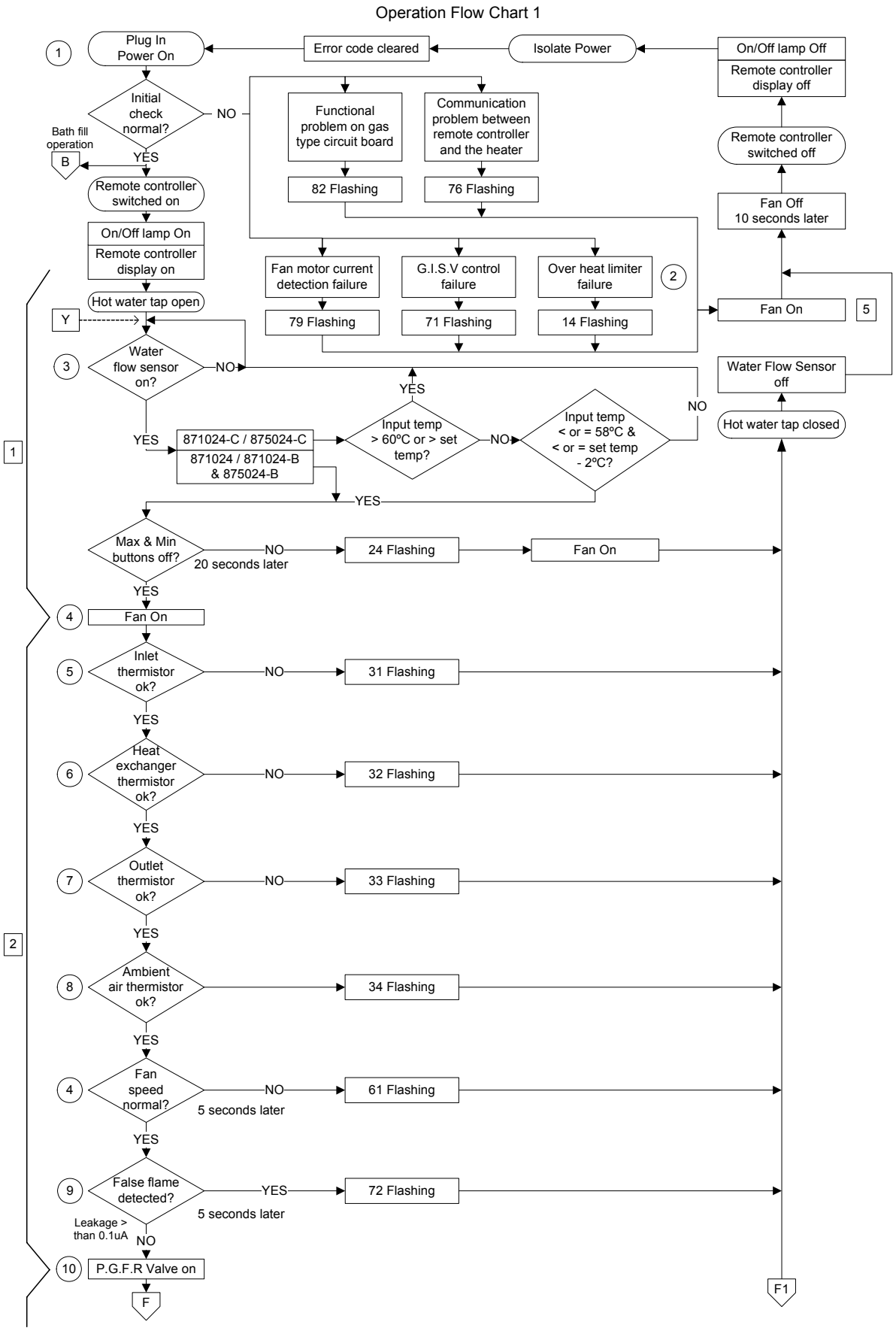
Operational Flow Charts



Note: see page 27 for details on interpreting chart abbreviations.

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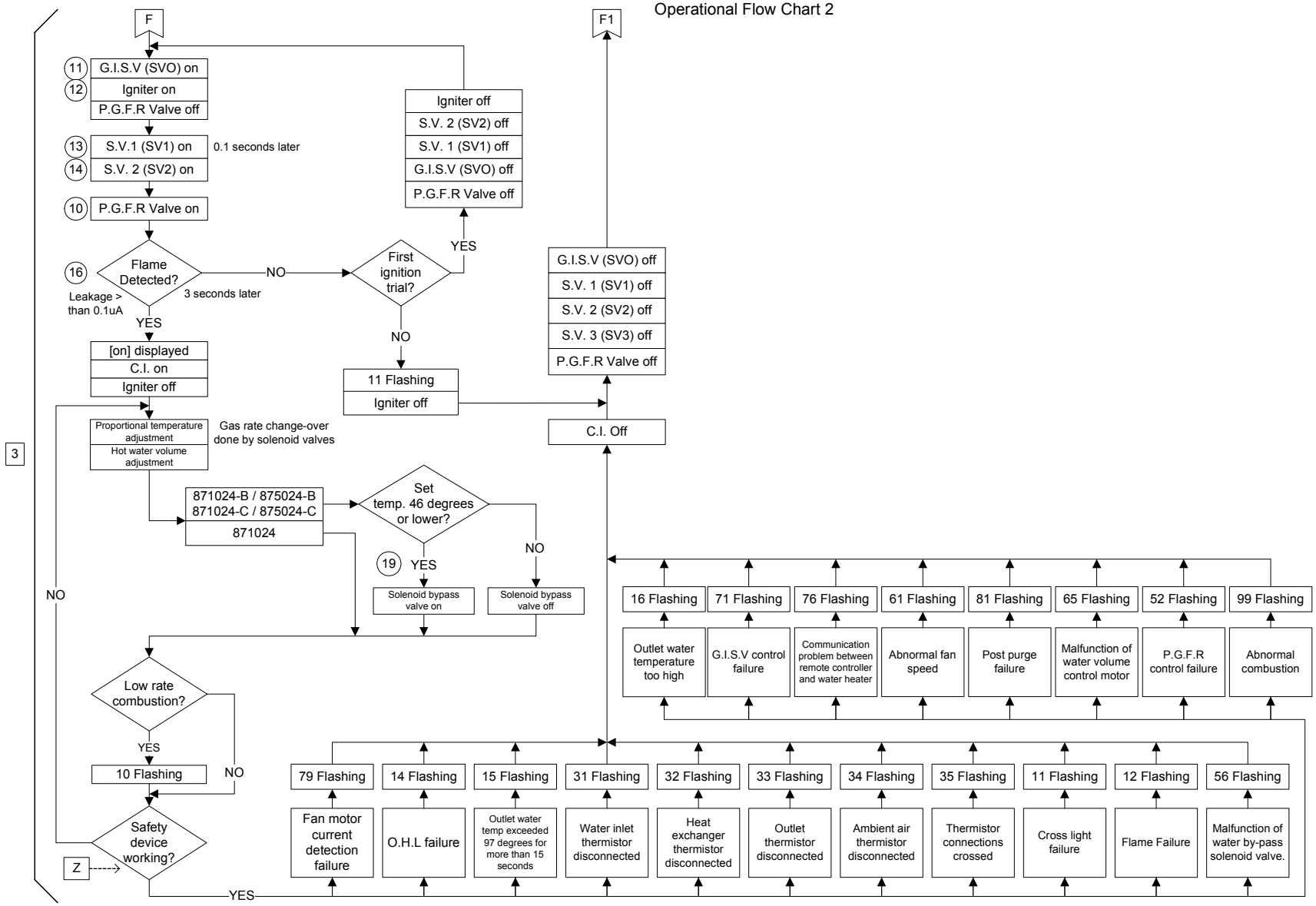
Operational Flow Chart 2



Note: see page 27 for details on interpreting chart abbreviations.

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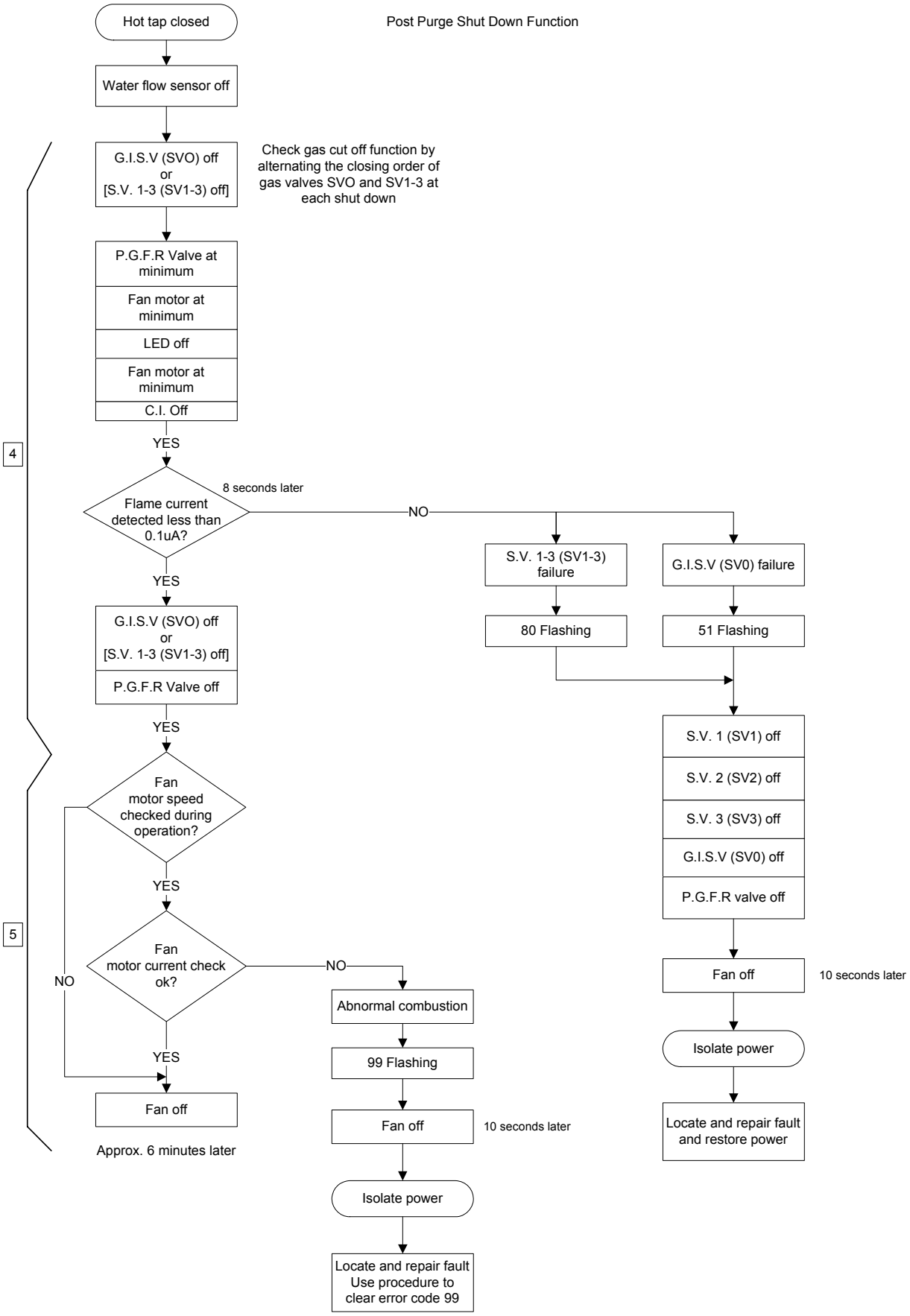
Operation Flow Chart 3



Note: see page 27 for details on interpreting chart abbreviations.

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Error Codes

The following table outlines the error codes, possible causes and diagnostic tests to conduct. More detailed diagnosis is outlined in the fault finding and operational flow charts.

Error Code	Fault Condition	Items To Check
10	Abnormal low rate combustion	Blockage in the heat exchanger, fan, air intake or flue
11	Ignition failure at start up Cross light failure	P.G.F.R Valve - diagnostic point 10 G.I.S Valve - diagnostic point 11 Igniter - diagnostic point 12 Solenoid valves 1, 2 & 3 - diagnostic points 13, 14 & 15 Flame sensors 1, 2 & 3 - diagnostic points 16 &17
12	Flame failure during operation	P.G.F.R Valve - diagnostic point 10 G.I.S Valve - diagnostic point 11 Solenoid valves 1, 2 & 3 - diagnostic points 13, 14 & 15 Flame sensors 1, 2 & 3 - diagnostic points 16 & 17
14	Over heating	Over Heat Limiter - diagnostic point 2
15	Very high temperature	Heat exchanger thermistor - diagnostic point 6 Hot water outlet thermistor - diagnostic point 7 P.G.F.R Valve - diagnostic point 10
16	Outlet water temp too high	P.G.F.R Valve - diagnostic point 10
24	Operational switch faulty	MAX or MIN button on IC board
31	Inlet thermistor open circuit	Water inlet thermistor - diagnostic point 5
32	Heat exchanger thermistor open circuit	Heat exchanger thermistor - diagnostic point 6
33	Outlet thermistor open circuit	Hot water thermistor - diagnostic point 7
34	Ambient air thermistor open circuit	Ambient air thermistor - diagnostic point 8
35	Thermistor connections crossed	Connection points of thermistors
51	Gas cut off malfunction	G.I.S Valve - diagnostic point 11 Flame sensor 1, 2 & 3 - diagnostic points 16 & 17
52	P.G.F.R control failure	P.G.F.R Valve – diagnostic point 10 Gas type circuit board IC Board
56	Bypass solenoid failure	Water Bypass solenoid – diagnostic point 19
61	Abnormal fan speed	Fan motor – diagnostic point 4
65	Malfunction of water volume control motor	Water volume control motor - diagnostic points 18 & 19
71	G.I.S valve control failure	Gas. Inlet Solenoid Valve IC Board (PCB) - diagnostic point 11
72	Detected false flame	Flame sensors 1, 2 & 3 - diagnostic point 9
76	Communication problem between controller and water heater	Remote controller IC Board or cable
79	Fan motor current detection failure	Fan motor IC Board – diagnostic point 4
80	Gas cut off defective	Solenoid valve 1, 2 & 3 - diagnostic points 13, 14 & 15 Flame sensor 1, 2 & 3 - diagnostic points 16 & 17
81	Post purge malfunction (Solenoid valve 1 failure)	Solenoid valve 1, 2 & 3 - diagnostic points 13, 14 & 15 Flame sensor 1, 2 & 3 - diagnostic point 9
82	Functional problem on gas type circuit board	Gas type circuit board
99	Abnormal combustion	Blockage in the heat exchanger, fan, air intake or flue way

Note: see page 27 for interpretation of abbreviations.

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Diagnostic Test Points

Refer to wiring diagram, page 6, for connector and wiring positions.

Test Point	Measuring Point		Normal Condition	Items Under Test
	Connector	Wire Nº & colour		
1	A	R1 – R2	AC 85V – 120V	Main Power
2	B	W8 – W12	50 kilo-ohms – 500 kilo-ohms	Overheat Limiter
3	B	BR9 – BL10	DC 2V– 5V(Pulse) ***1** More than 1310 pulse/min	Water Flow Sensor pulse signal
		R11 – BL10	DC 7V – 15V	Water Flow Sensor
4	K	B4 – W6	DC 120V – 170V	Fan Motor
		R3 – B4	DC 11V – 19V	
		Y1 – B4	DC 4V – 10V(Pulse) ***1** More than 4800 pulse/min	Fan Motor is pulse signal
5	B	Y6 – BL7	@ 20ºC – 10.3 kilo-ohms @ 40ºC – 4.9 kilo-ohms	Water Inlet Thermistor
6	B	W5 – BL7	@ 20ºC – 10.3 kilo-ohms @ 40ºC – 4.9 kilo-ohms	Heat Exchanger Thermistor
7	B	R4 – BL7	@ 20ºC – 10.3 kilo-ohms @ 40ºC – 4.9 kilo-ohms	Hot Water Outlet Thermistor
8	B	B3 – BL7	@ 25ºC – 5.0 kilo-ohms @ 5ºC – 12.7 kilo-ohms	Ambient Air Thermistor
9	J	R1 – Earth	AC 2V – 20V ***2**	Flame Sensor detecting flame
		W3 – Earth	AC 2V – 20V ***2**	
		B2 - Earth	AC 2V – 20V ***2**	
10	B	R1 – BL2	DC 1.5V – 8.0V 42 ohms – 97 ohms	Proportional Gas Flow Regulating
11	L	Y9 – BL10	DC 70V – 110V 0.8 kilo-ohms – 2.2 kilo-ohms	Gas Inlet Solenoid Valve
12	L	R2 – R8	AC 85V – 120V	Igniter
13	L	R3 – BL10	DC 70V – 110V 0.8 kilo-ohms – 2.2 kilo-ohms	Solenoid Valve 1
14	L	W4 – BL10	DC 70V – 110V 0.8 kilo-ohms – 2.2 kilo-ohms	Solenoid Valve 2
15	L	B5 – BL10	DC 70V – 110V 0.8 kilo-ohms – 2.2 kilo-ohms	Solenoid Valve 3
16	J	R1 – Earth	AC 2V – 20V ***2**	Flame Sensor not detecting flame.
		W3 - Earth	AC 2V – 20V ***2**	
17	J	B2 - Earth	AC 2V – 20V ***2**	
18	H	W2 – BL8	DC 8V – 16V	Water Volume Control Motor position switch
		R7 – BL8	DC 8V – 16V	
		GR6 – BL8	Less than DC 1V (Limiter off) DC 4V – 6V (Limiter on)	
19	L	O6 – O12	DC 70 – 110V 0.6 kilo-ohms – 2.8 kilo-ohms	Water Bypass Solenoid (models with -B or -C suffix in model number only e.g. 871024NF-B)

NOTES:

***1:** Approximate reading measured by digital multimeter on DC range.

***2:** Approximate reading measured by digital multimeter on AC range.

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Maintenance Information

Information relating to both the current and past operation of the water heater can be obtained from the memory; this information is referred to as the maintenance information.

The table below details the information that can be recalled from the memory i.e. to view the current temperature being measured by the outlet thermistor select 5Y, refer to page 34 for the procedure to display maintenance information.

Maintenance Table

Right digit in LED display (Alphabetical)	Left digit in LED display (Numerical) 0	1	2	3	4	5	6	7	8	9
E	Null	Error Code for the previous 8 faults								Null
F	Null	Sequence number of the previous 8 faults								Null
C	Total combustion starts X 10,000	Total combustion operations since last error X 10,000 hours								Null
D	Total combustion starts X 100	Total combustion operations since last error X 100 hours								Null
H	Total combustion period X 1000 hrs	Total combustion period since last error X 1,000 hours								Null
J	Total combustion period X 10 hrs	Total combustion period since last error X 10 hours								Null
Y	Flame sensor status (See table below)	Water Flow Sensor Litres / minute	Ambient Air Thermistor temp. °C	Water Inlet Thermistor temp. °C	Heat Exchanger Thermistor temp °C	Hot Water Outlet Thermistor temp °C	Fan speed X100 RPM	Power for P.G.F.R Valve	Null	Opening angle of Water Volume Control motor in degrees
A	Fan motor current curve (average)	Fan Motor current curve - after tap closure	Fan Motor current curve -present combustion	Fan Motor Current	Null	Null	Bath fill flow volume drawn Litres /minute X 10 (Models with -B or -C suffix in model number only e.g. 871024NF-B)	Null	Null	Sequence number

Flame Sensor Status

Model	871024 / 875024							
R0y Information	00	01	02	03	04	05	06	07
Flame Sensor 1	X	O	X	O	X	O	X	O
Flame Sensor 2	X	X	O	O	X	X	O	O
Flame Sensor 3	X	X	X	X	O	O	O	O

X = Flame sensor is not detecting flame. **O** = Flame sensor is detecting flame

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Displaying Maintenance Information

Voltages up to 240 volts will be present within the water heater, take care not to touch wiring terminals. Use an insulated tool when operating the DIP switch or MIN and MAX buttons.

At the Water Heater

1. Remove the front panel from the water heater.
2. Using an insulated tool, turn DIP SWITCH 1 on (refer to figure 1).
3. Use the MIN button to change the left digit (0→1etc.) in the LED display to the required maintenance code identified from the maintenance table on page 33.
4. Use the MAX button to change the right digit (E→F etc.) in the LED display to the required maintenance code identified from the maintenance table on page 33.
5. The maintenance code and the value of that code will alternate on the LED display.
6. Turn DIP SWITCH 1 off (down position) when diagnosis is complete.
7. Refit the front panel to the water heater.

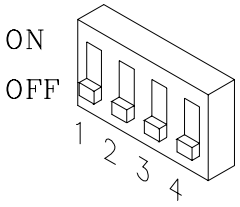

Fig 1

NOTE: Turning on DIP SWITCH 2 will lock the display if required.

From a Remote Controller

1. Ensure the Remote Controller is turned off.
2. Press the temperature increase and decrease buttons simultaneously for 3 seconds
3. Use Temperature decrease button to change the left digit (0→1etc.) in the LED display to the required maintenance code identified from the maintenance table on page 33.
4. Use the Temperature increase button to change the right digit (E→F etc.) in the LED display to the required maintenance code identified from the maintenance table on page 33.
5. The maintenance code and the value of that code will alternate on the LED display of the Remote Controller.
6. Press the on/off button twice on the Remote Controller to cancel maintenance information.

Clearing Error Code History

After successfully repairing the water heater the existing Error Code history should be cleared. This will allow fresh data to be stored and reduce the risk of confusion should it be necessary to service the water heater in the future.

To clear the Error Code history:

1. Ensure all controllers (if fitted) are turned off and all hot taps are closed.
2. Remove the front panel of the water heater.
3. Turn DIP SWITCH 1 on (up position) and then off (down position) again.
4. Within 5 seconds of turning DIP SWITCH 1 off, press and hold either the MIN or MAX button for more than 2 seconds. “CL” will flash in the LED display indicating the history is cleared.
5. Refit the water heater front panel.

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Resetting Error Codes

Most Error Codes can be reset by shutting off the hot water flow and turning the controllers (if fitted) off and then on again. It may also be necessary to isolate and restore the power. Where controllers are not fitted it may be necessary to turn the power off at the water heater to clear the error code.

Voltages up to 240 volts will be present within the water heater, take care not to touch wiring terminals. Use an insulated tool when operating the DIP switch or MIN and MAX buttons.

To reset Error Code 99 it is necessary to:

1. Ensure water is not flowing through the water heater.
2. Turn off remote controllers (if fitted).
3. Ensure all DIP SWITCHES are in the off position (down position).
4. Turn DIP SWITCH 2 on (up position) and then off (down position).
5. Within 5 seconds of turning DIP SWITCH 2 off, press and hold both the MIN and MAX buttons for more than 2 seconds.
6. “UL” will flash in the LED display and then become steady.
7. Turn on a controller (if fitted) then open and close a hot water tap to complete the procedure.

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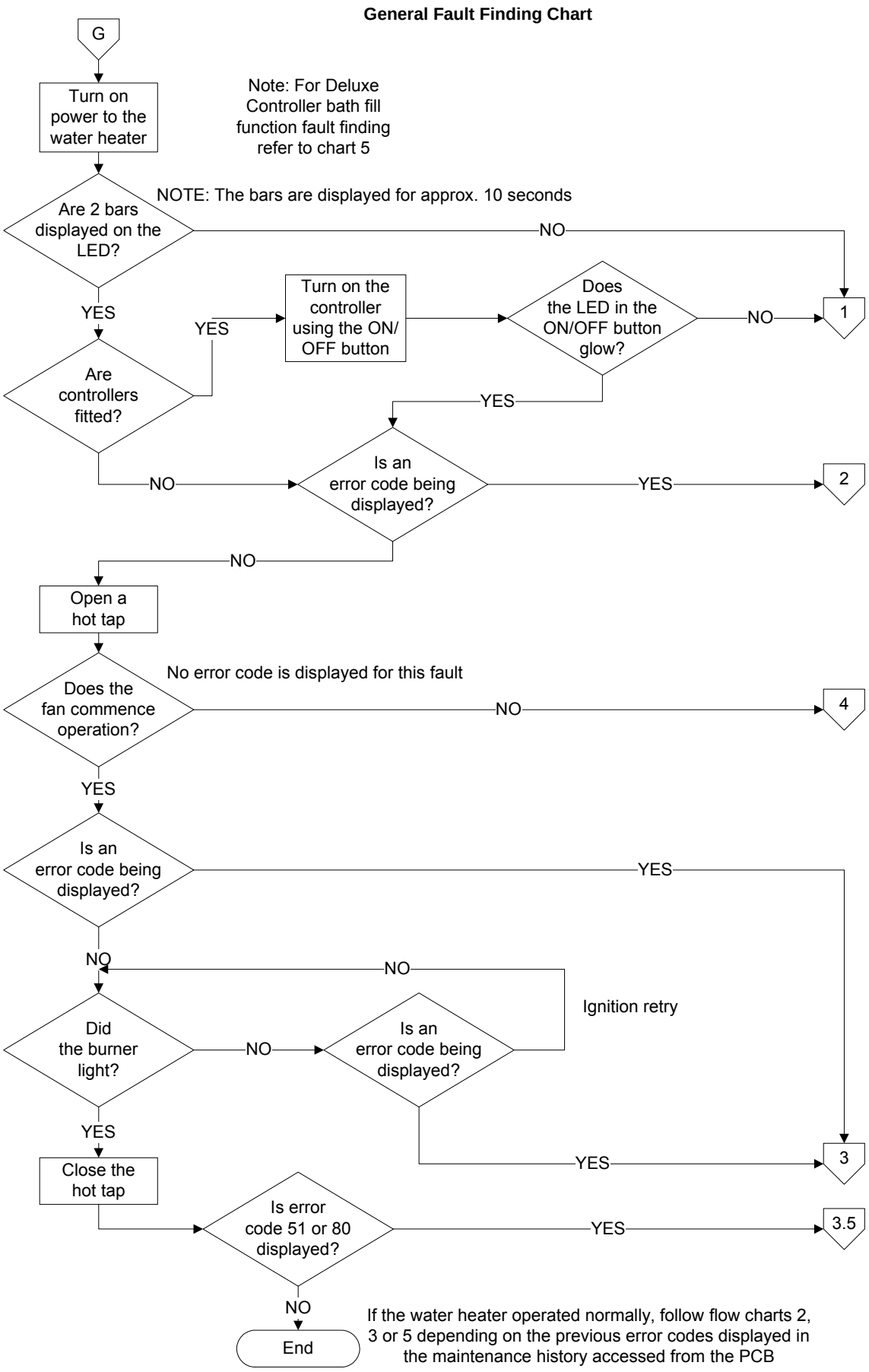
Fault Diagnosis Sequence (Fault Finding Chart G)



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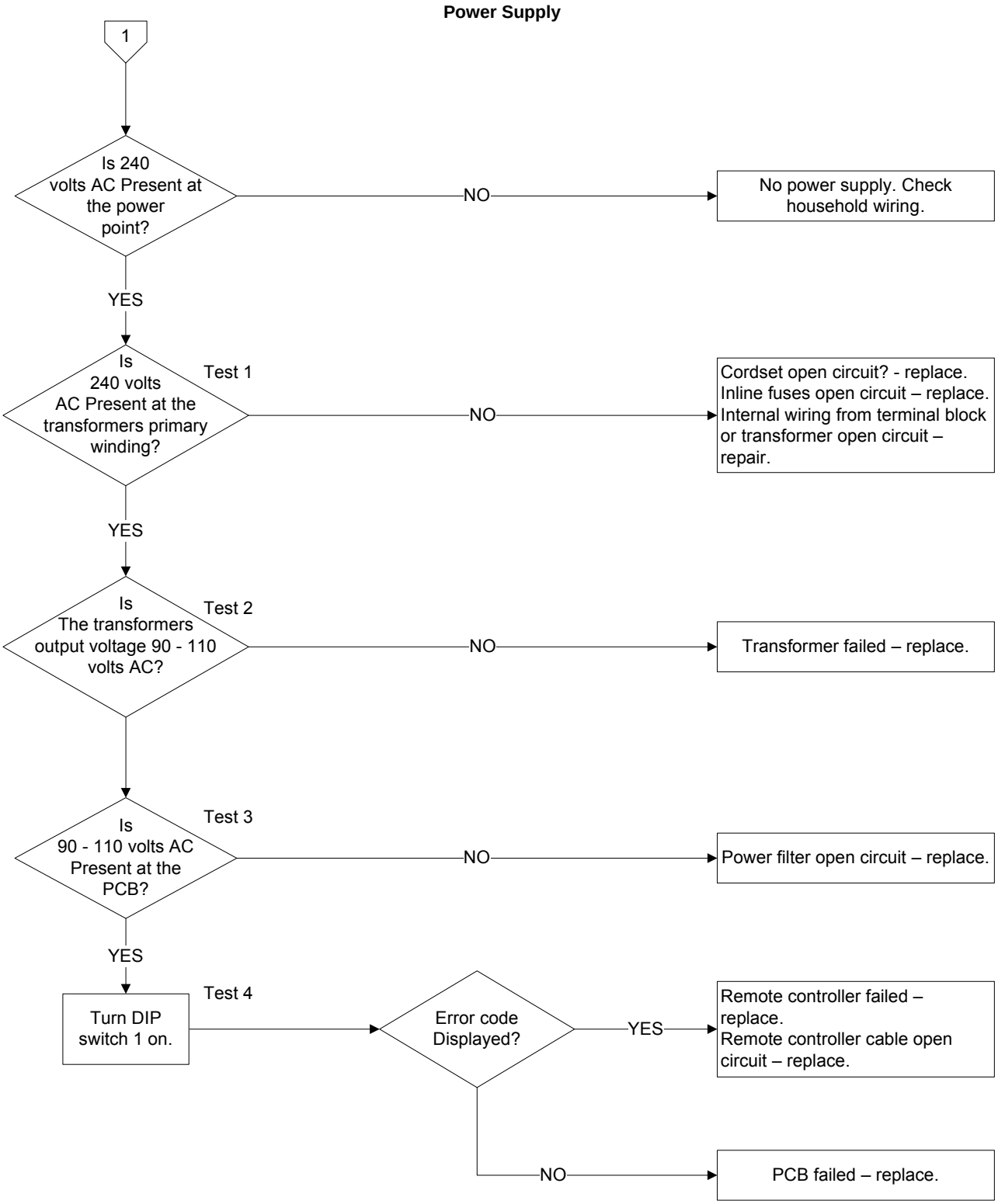
Fault Finding Chart 1

Voltages up to 240 volts will be present within the water heater, take care not to touch wiring terminals. Use an insulated tool when operating the DIP switch or MIN and MAX buttons.


Power Supply
1
Is 240 volts AC Present at the power point?
NO
No power supply. Check household wiring.
YES
Test 1
Is 240 volts AC Present at the transformers primary winding?
NO
Cordset open circuit? - replace.
Inline fuses open circuit – replace.
Internal wiring from terminal block or transformer open circuit – repair.
YES
Test 2
Is The transformers output voltage 90 - 110 volts AC?
NO
Transformer failed – replace.
Test 3
Is 90 - 110 volts AC Present at the PCB?
NO
Power filter open circuit – replace.
YES
Test 4
Turn DIP switch 1 on.
Error code Displayed?
YES
Remote controller failed – replace.
Remote controller cable open circuit – replace.
NO
PCB failed – replace.

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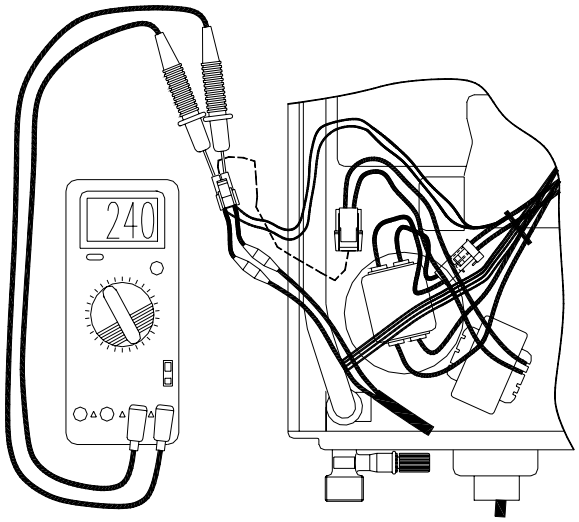
Fault Finding Tests 1 – 4

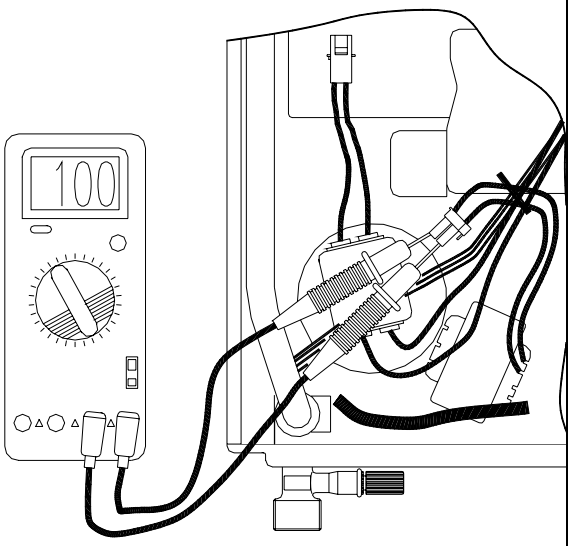
Components will be "Live" when conducting tests, exercise caution.

Test 1



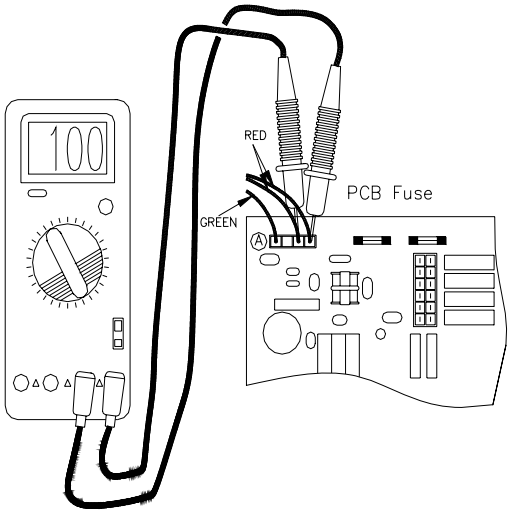
Measure the voltage at the connector plug to the transformer primary winding with a multimeter set on the AC voltage scale. If the voltage is between 230V and 250V the cord set and inline fuses are ok.

Test 2



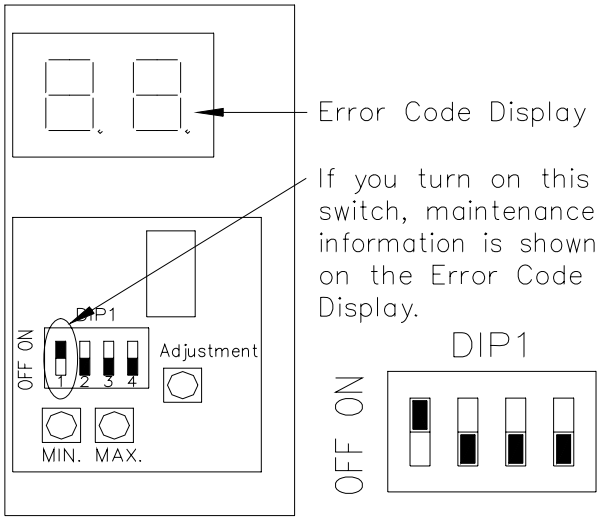
Measure the voltage at the connector plug from the transformer secondary winding with a multimeter set on the AC voltage scale. If the voltage is between 90V and 110V the transformer is ok.

Test 3



Measure the voltage at connector A between R1 and R2 on the PCB with a multimeter set on the AC voltage scale. If the voltage is between 90V and 110V the power filter is ok.

Test 4



Using an insulated tool, turn DIP switch 1 on

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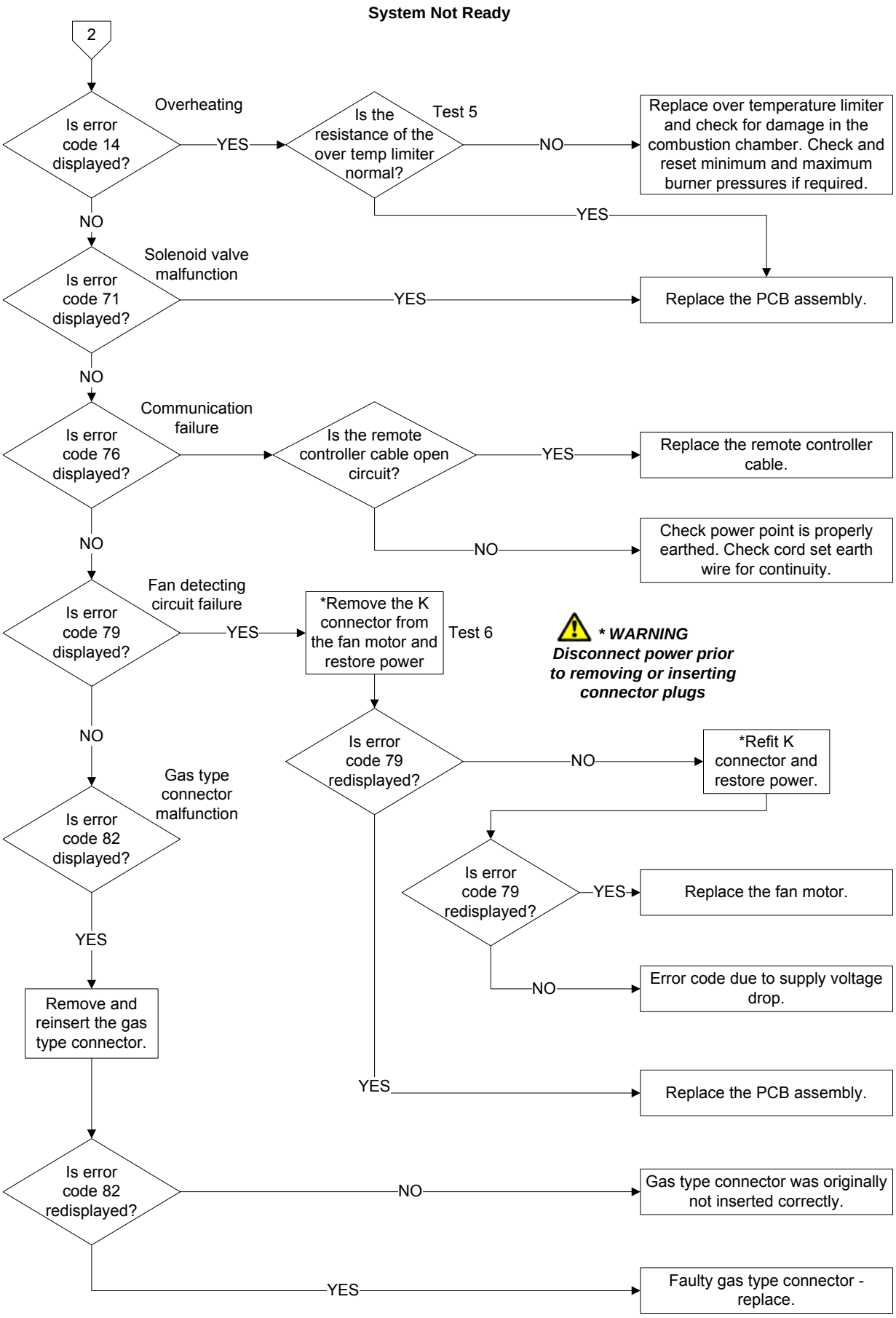
Fault Finding Chart 2


System Not Ready
2
Is error code 14 displayed?
Overheating
YES
Is the resistance of the over temp limiter normal?
Test 5
NO
Replace over temperature limiter and check for damage in the combustion chamber. Check and reset minimum and maximum burner pressures if required.
YES
NO
Is error code 71 displayed?
Solenoid valve malfunction
YES
Replace the PCB assembly.
NO
Is error code 76 displayed?
Communication failure
Is the remote controller cable open circuit?
YES
Replace the remote controller cable.
NO
Check power point is properly earthed. Check cord set earth wire for continuity.
NO
Is error code 79 displayed?
Fan detecting circuit failure
YES
*Remove the K connector from the fan motor and restore power
Test 6
* WARNING
Disconnect power prior to removing or inserting connector plugs
Is error code 79 redisplayed?
NO
*Refit K connector and restore power.
NO
Is error code 82 displayed?
Gas type connector malfunction
Is error code 79 redisplayed?
YES
Replace the fan motor.
NO
Error code due to supply voltage drop.
YES
Remove and reinsert the gas type connector.
YES
Replace the PCB assembly.
Is error code 82 redisplayed?
NO
Gas type connector was originally not inserted correctly.
YES
Faulty gas type connector - replace.

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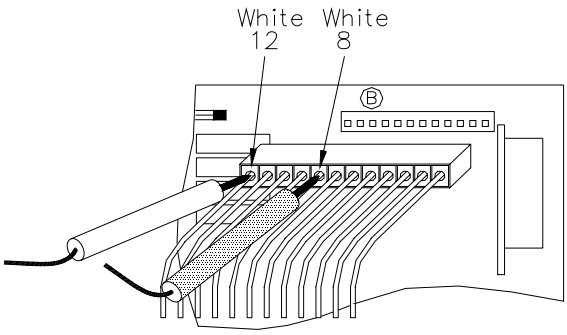
Fault Finding Tests 5 – 8

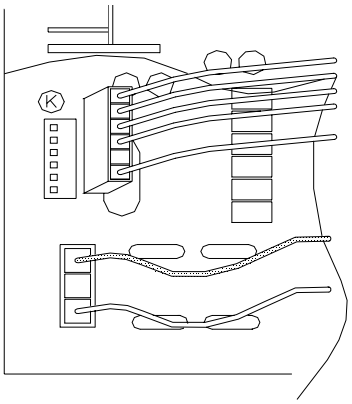
Isolate power before removing connector plugs

Test 5



Unplug connector B from the PCB and measure the resistance of the Over Heat Limiter Assembly. Resistance should be between 50kilo-ohms and 500 kilo-ohms.

Test 6

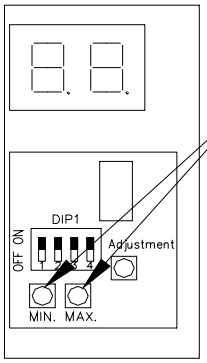


Unplug connector K from the PCB. Restore power and check if error code 79 is displayed within 30 seconds.

Isolate power when conducting resistance tests. "Live" components present during voltage tests, exercise caution

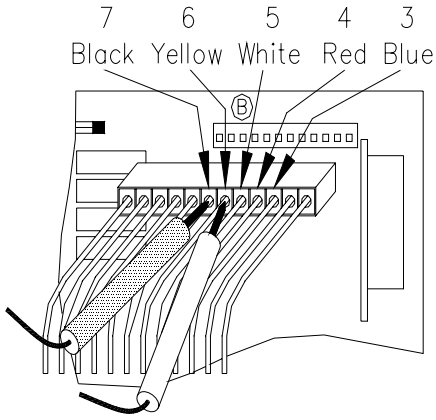
Test 7

Use an insulated tool when operating the DIP switch or MIN and MAX buttons.



Opening Hot Water Outlet Tap with Min. Max. button pressed. Error Code 24 is displayed in about 10 seconds.

Test 8 – Diagnostic points 5, 6, 7 & 8



Remove the B connector and measure the resistance

Error code	Maintenance Display Code	Diag Point	Test Point	Measured Value
31	3y: Water Inlet Thermistor	5	6 Yellow 7 Black	20ºC – 10.3 kilo-ohms 40ºC – 4.9 kilo-ohms
32	4y: Combustion Chamber Thermistor	6	5 White 7 Black	
33	5y: Hot Water Outlet Thermistor	7	4 Red 7 Black	
34	2y: Ambient Air Thermistor	8	3 Blue 7 Black	25ºC – 5.0 kilo-ohms 5ºC – 12.7 kilo-ohms

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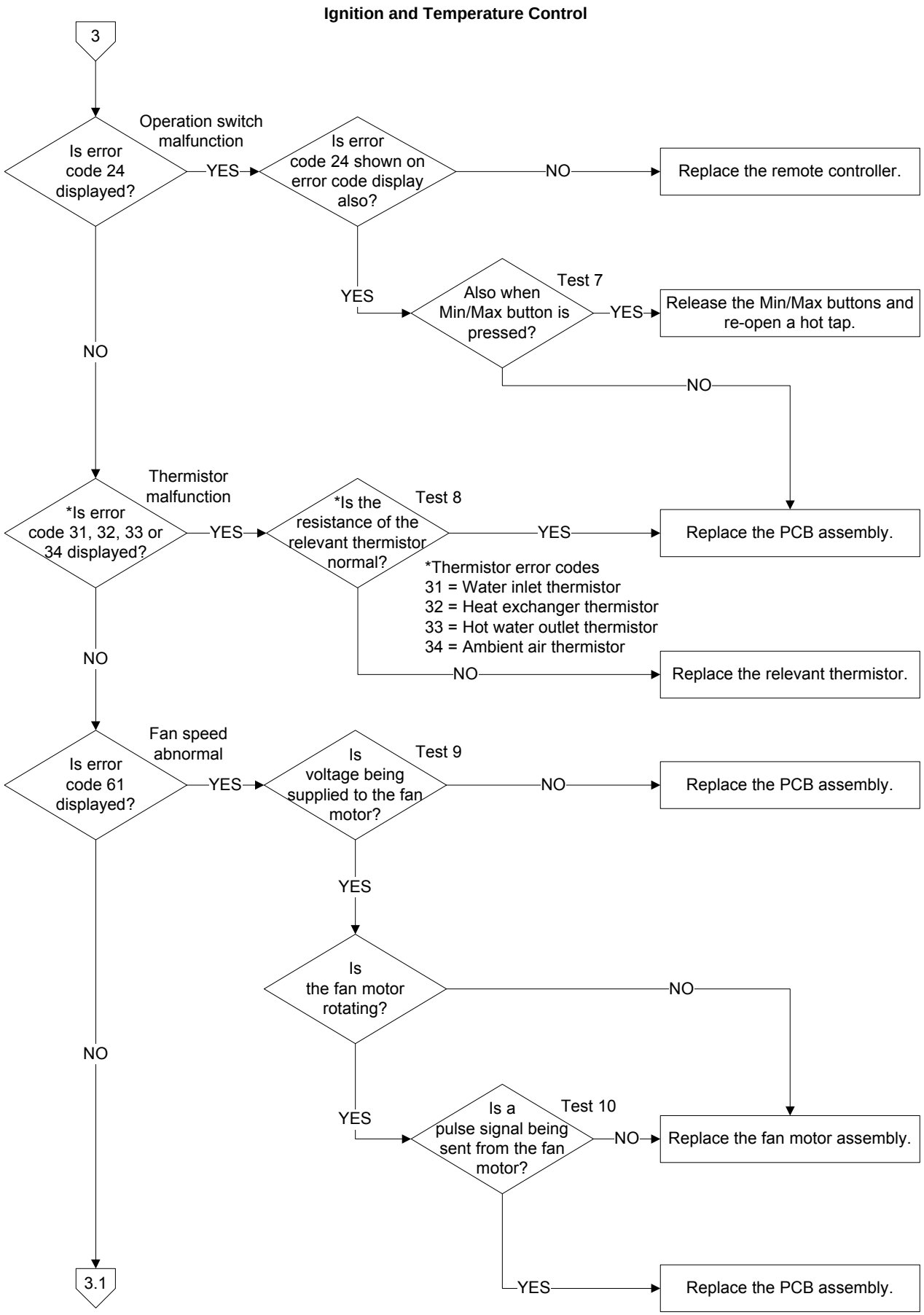
Fault Finding Chart 3



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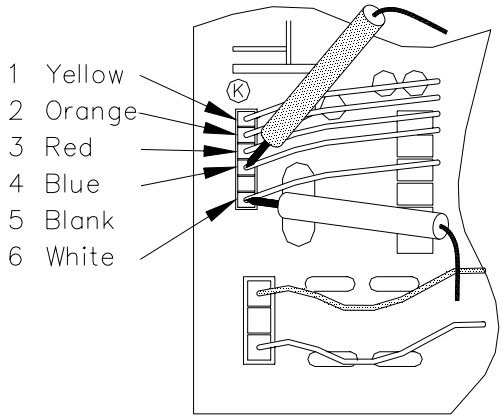
Fault Finding Tests 9 – 13

Isolate power when conducting resistance tests. "Live" components present during voltage tests, exercise caution

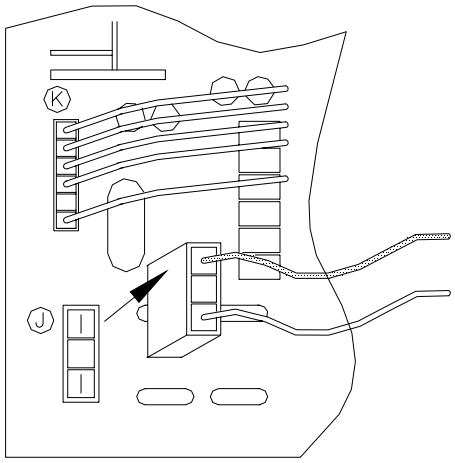
Tests 9 and 10 – Diagnostic Point 4



Diagnostic Point 4
Conduct test with water flowing

Test	Check Point	Measured Value
9	4 Blue – 6 White	DC120 -160V
	3 Red – 4 Blue	DC11 -19V
10	1 Yellow – 4 Blue	DC4 –10V (or measurement by pulse counter of not less than 4800 pulses per minute)

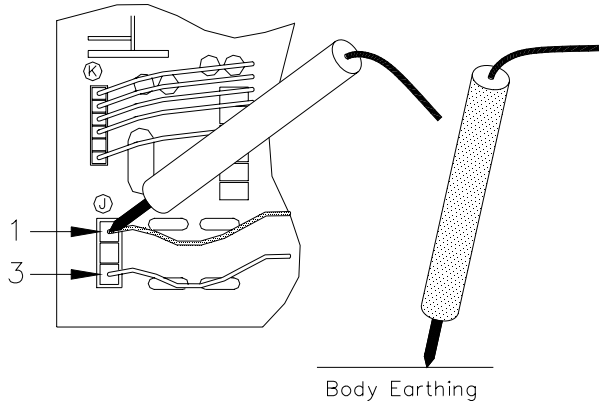
Test 11



Isolate power before removing connector plugs

Unplug connector J from the PCB and select maintenance information 0y on the L.E.D display.
If 01-07 is displayed the PCB has failed. If 00 is displayed there may be current leakage to earth

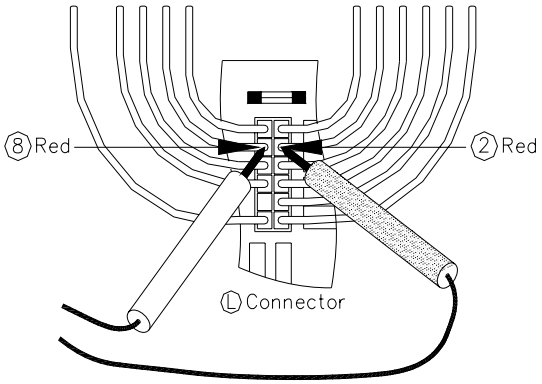
Test 12 - Diagnostic Point 9



Conduct test with no water flow

Measure the voltage between terminals 1, 2 and 3 on connector J and earth. Voltage should be between AC2 – 20V

Test 13 - Diagnostic Point 12



Conduct test with water flowing

When ignition sequence commences, normal voltage should be between AC 85 - 110V until flame is detected.
(Note: Duration is approximately 3 seconds)

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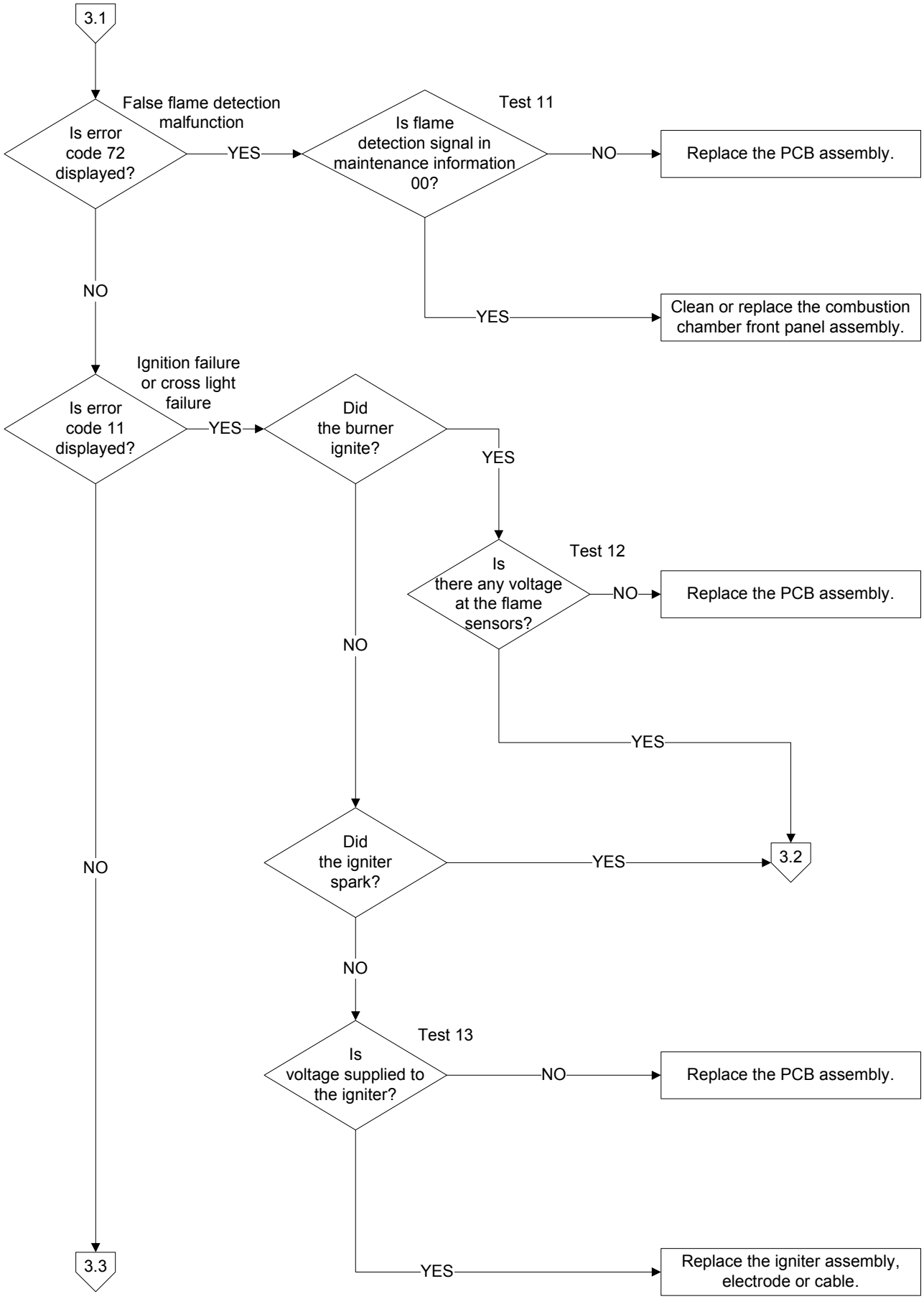
Fault Finding Chart 3.1



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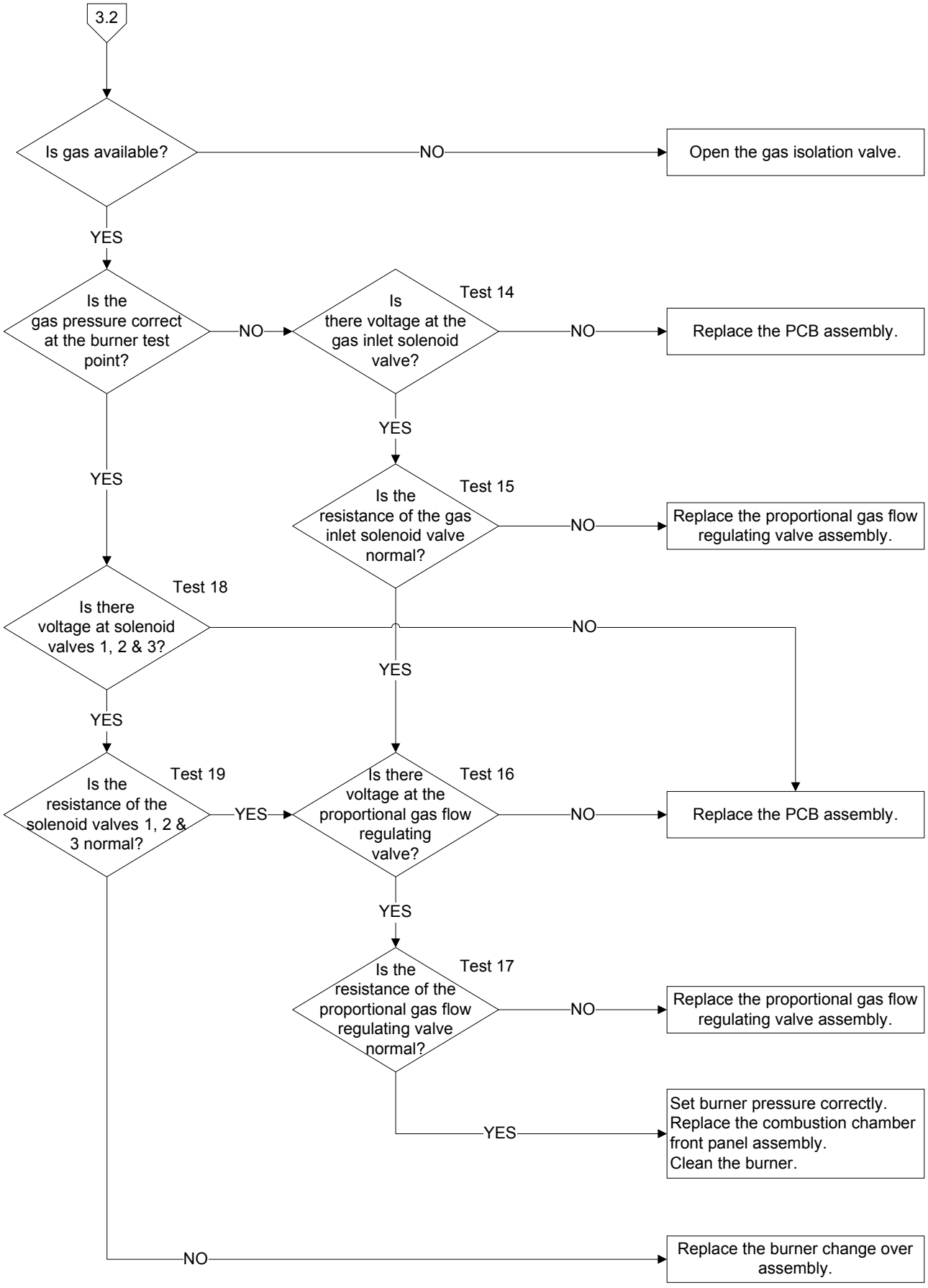
Fault Finding Chart 3.2



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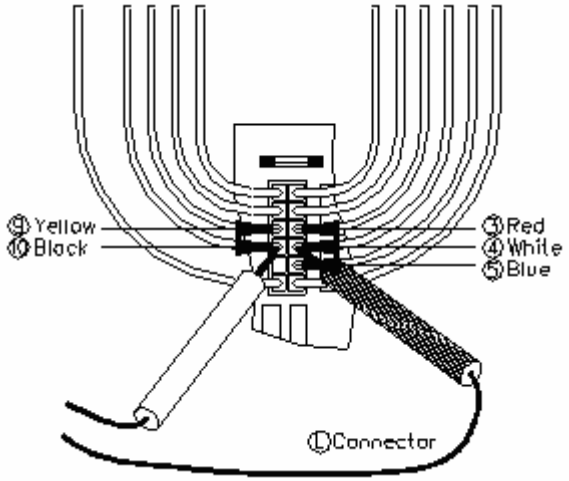
Fault Finding Tests 14 – 22

Isolate power when conducting resistance tests. "Live" components present during voltage tests, exercise caution.

Tests 14, 15, 18, 19, 20 and 21



NOTE:

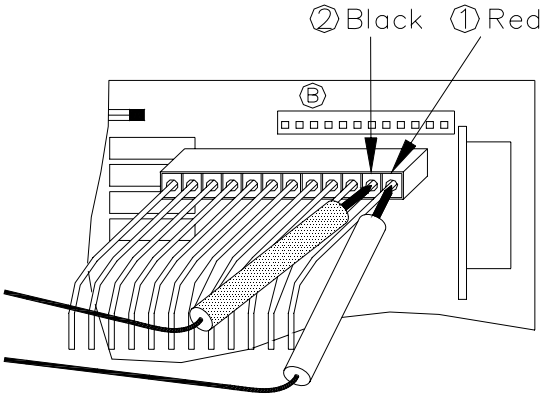
Measure the voltage with connector L plugged into PCB

Measure the resistance with connector L unplugged from the PCB

Test	Solenoid Valve	Normal Voltage	Test Point	Diagnostic Point
14	GISV	DC70 to DC100V	9 Yellow 10 Black	11
18	1		3 Red 10 Black	13
	2		4 White 10 Black	14
	3		5 Blue 10 Black	15

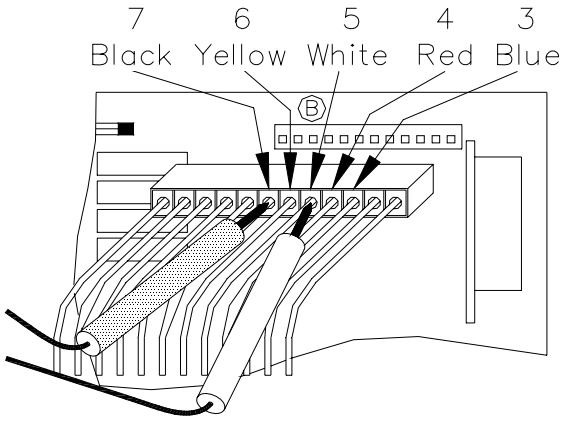
Test	Solenoid Valve	Normal Resistance	Test Point	Diagnostic Point
15	GISV	0.8kilo-ohms to 2.2kilo-ohms	9 Yellow 10 Black	11
19	1		3 Red 10 Black	13
	2		4 White 10 Black	14
	3		5 Blue 10 Black	15

Tests 16 and 17 - Diagnostic Point 10



Test 16 – Conduct test with water flowing
Measure the voltage with connector B plugged into PCB. Normal voltage is between DC1.5 and 8.0V.
Test 17 – Isolate power before conducting test.
Measure the resistance with connector B unplugged from the PCB. Normal resistance is between 42 ohms and 97 ohms.

Test 22 – Diagnostic Points 6 and 7



Error Code	Maintenance display code	Diagnostic Point	Test Point	Measured Value
32	4y: Combustion Chamber Thermistor	6	5 White 7 Black	@20ºC – 10.3 kilo-ohms @40ºC – 4.9 kilo-ohms
33	5y: Hot Water Outlet Thermistor	7	4 Red 7 Black	

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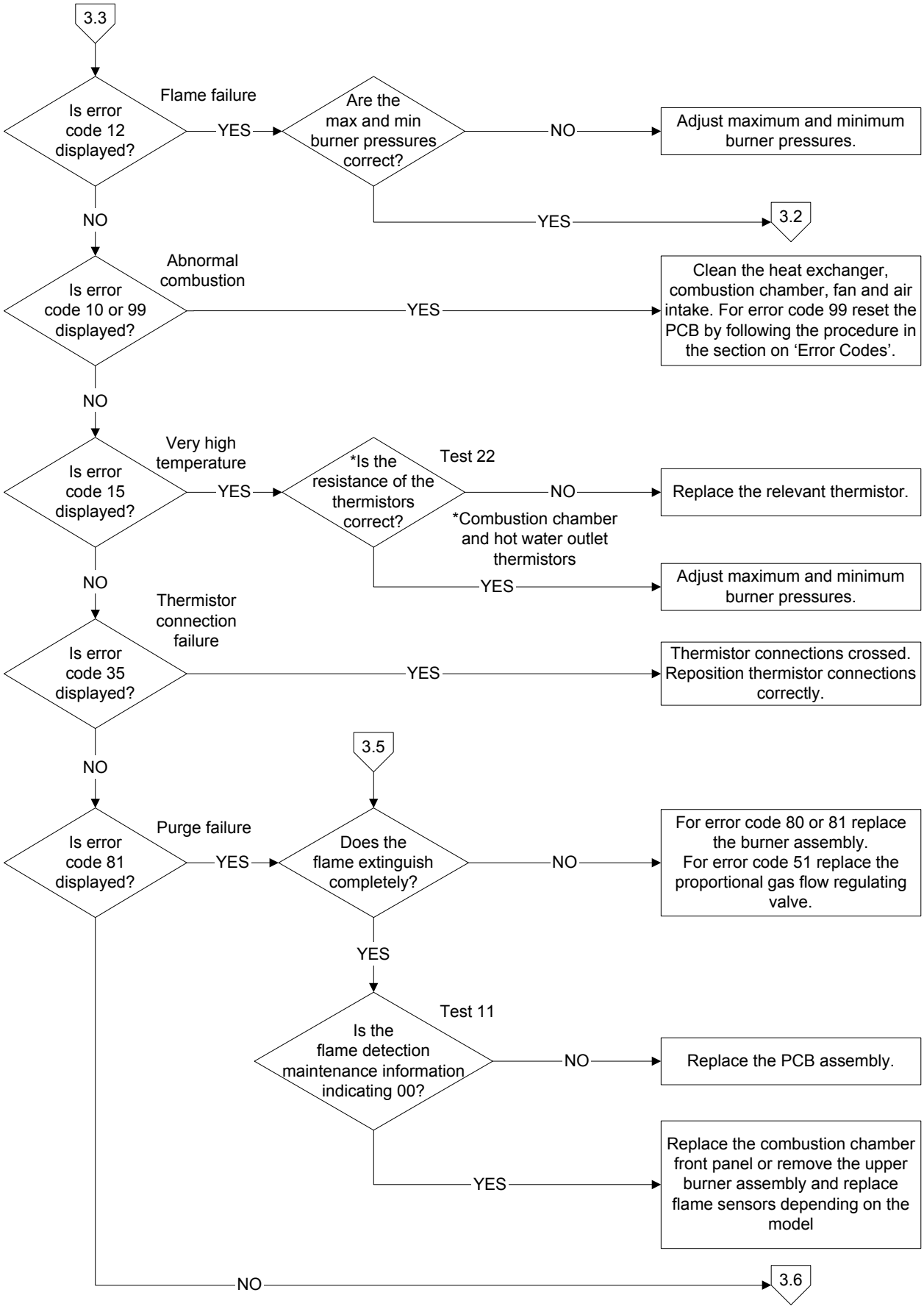
Fault Finding Charts 3.3 and 3.5


3.3
Is error code 12 displayed?
Flame failure
YES
Are the max and min burner pressures correct?
NO
Adjust maximum and minimum burner pressures.
YES
3.2
NO
Is error code 10 or 99 displayed?
Abnormal combustion
YES
Clean the heat exchanger, combustion chamber, fan and air intake. For error code 99 reset the PCB by following the procedure in the section on 'Error Codes'.
NO
Is error code 15 displayed?
Very high temperature
YES
*Is the resistance of the thermistors correct?
Test 22
NO
Replace the relevant thermistor.
*Combustion chamber and hot water outlet thermistors
YES
Adjust maximum and minimum burner pressures.
NO
Is error code 35 displayed?
Thermistor connection failure
YES
Thermistor connections crossed. Reposition thermistor connections correctly.
NO
3.5
Is error code 81 displayed?
Purge failure
YES
Does the flame extinguish completely?
NO
For error code 80 or 81 replace the burner assembly.
For error code 51 replace the proportional gas flow regulating valve.
YES
Is the flame detection maintenance information indicating 00?
Test 11
NO
Replace the PCB assembly.
YES
Replace the combustion chamber front panel or remove the upper burner assembly and replace flame sensors depending on the model
NO
3.6

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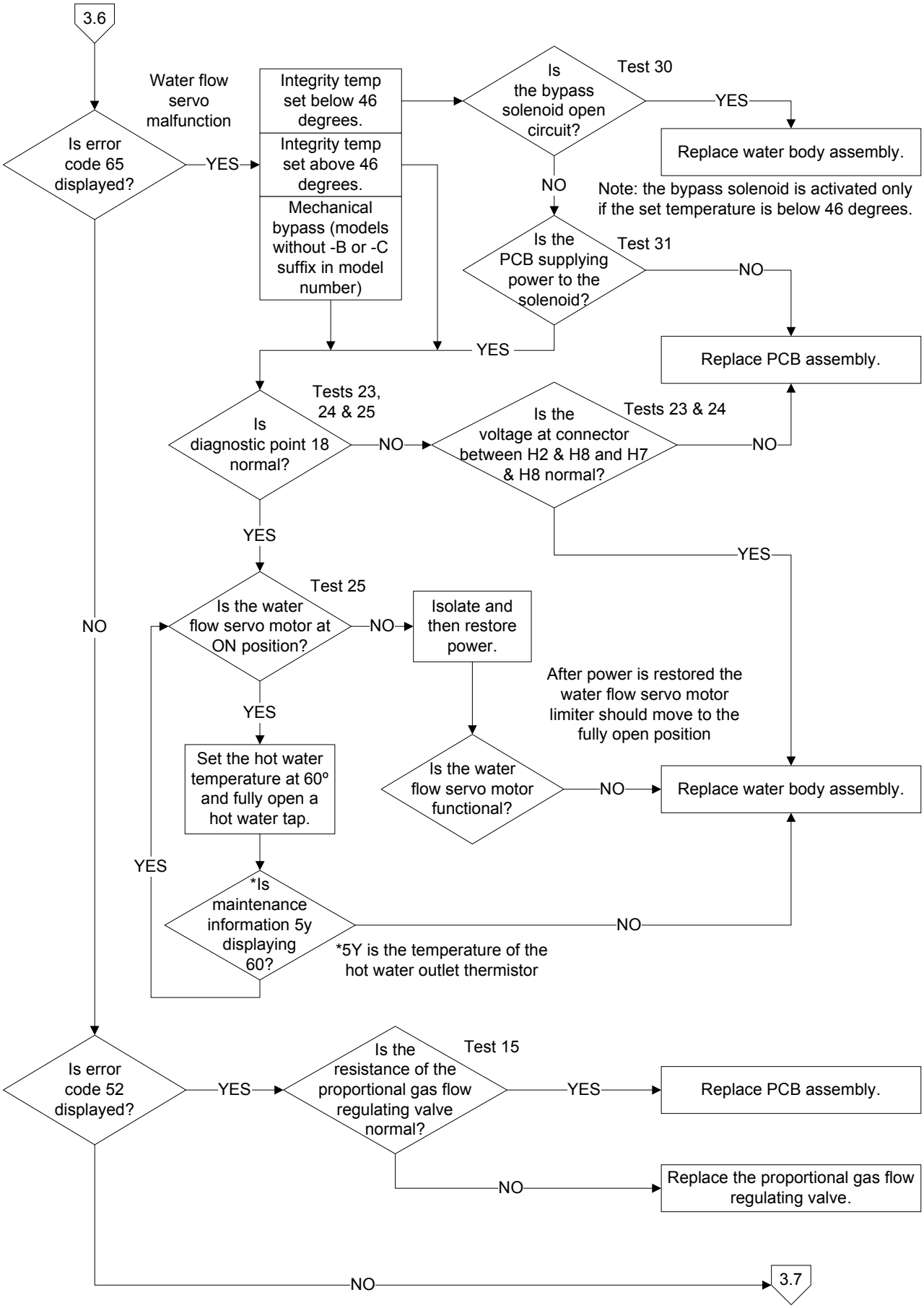
Fault Finding Chart 3.6


3.6
Is error code 65 displayed?
YES
Water flow servo malfunction
Integrity temp set below 46 degrees.
Integrity temp set above 46 degrees.
Mechanical bypass (models without -B or -C suffix in model number)
Is the bypass solenoid open circuit?
Test 30
YES
Replace water body assembly.
NO
Note: the bypass solenoid is activated only if the set temperature is below 46 degrees.
Is the PCB supplying power to the solenoid?
Test 31
NO
Replace PCB assembly.
YES
Is diagnostic point 18 normal?
Tests 23, 24 & 25
NO
Is the voltage at connector between H2 & H8 and H7 & H8 normal?
Tests 23 & 24
NO
YES
YES
Is the water flow servo motor at ON position?
Test 25
NO
Isolate and then restore power.
After power is restored the water flow servo motor limiter should move to the fully open position
YES
Set the hot water temperature at 60º and fully open a hot water tap.
Is the water flow servo motor functional?
NO
Replace water body assembly.
YES
*Is maintenance information 5y displaying 60?
NO
*5Y is the temperature of the hot water outlet thermistor
NO
Is error code 52 displayed?
YES
Is the resistance of the proportional gas flow regulating valve normal?
Test 15
YES
Replace PCB assembly.
NO
Replace the proportional gas flow regulating valve.
NO
3.7

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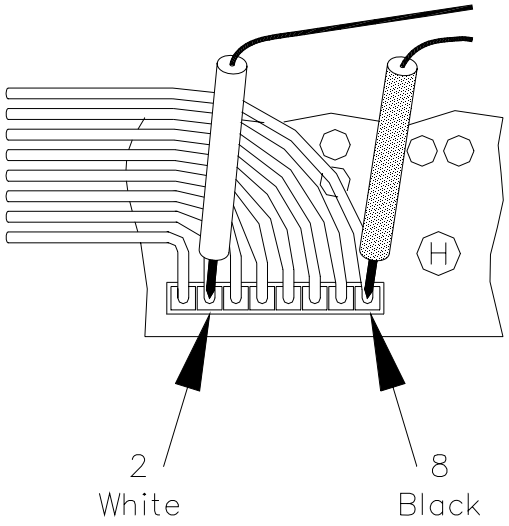
Fault Finding Tests 23 – 28

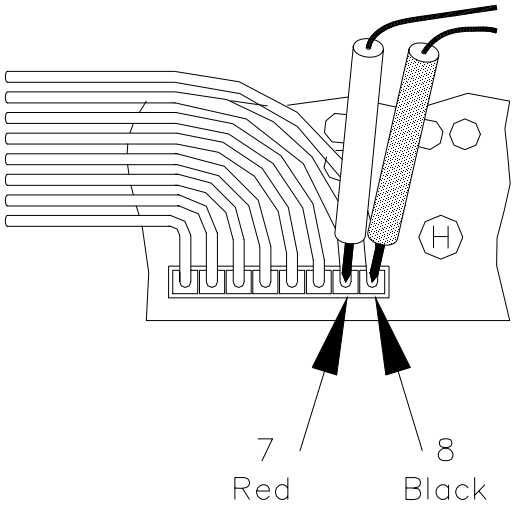
Test 23 - Diagnostic Point 18



Conduct test with water flowing

Test Point Connector H	Measured Value
2 White - 8 Black	DC8 – 16V

Test 24 - Diagnostic Point 18

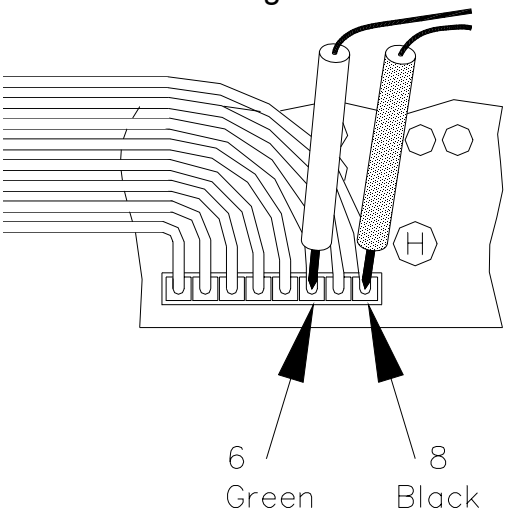


Conduct test with water flowing

Test Point Connector H	Measured Value
7 Red - 8 Black	DC8 – 16V

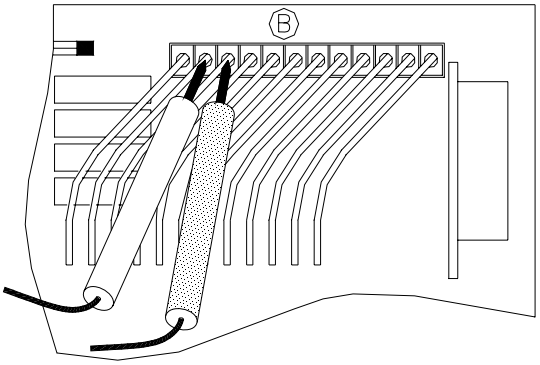
Components will be "Live" when conducting tests, exercise caution

Test 25 - Diagnostic Point 18



Test Point Connector H	Measured Value
6 Green - 8 Black	On position < DC1V Off position DC4 – 6V

Test 28 - Diagnostic Point 3



Conduct test with water flowing

Measure the voltage between 11 Red and 10 Black on connector B.
Voltage should be between DC7 – 15V

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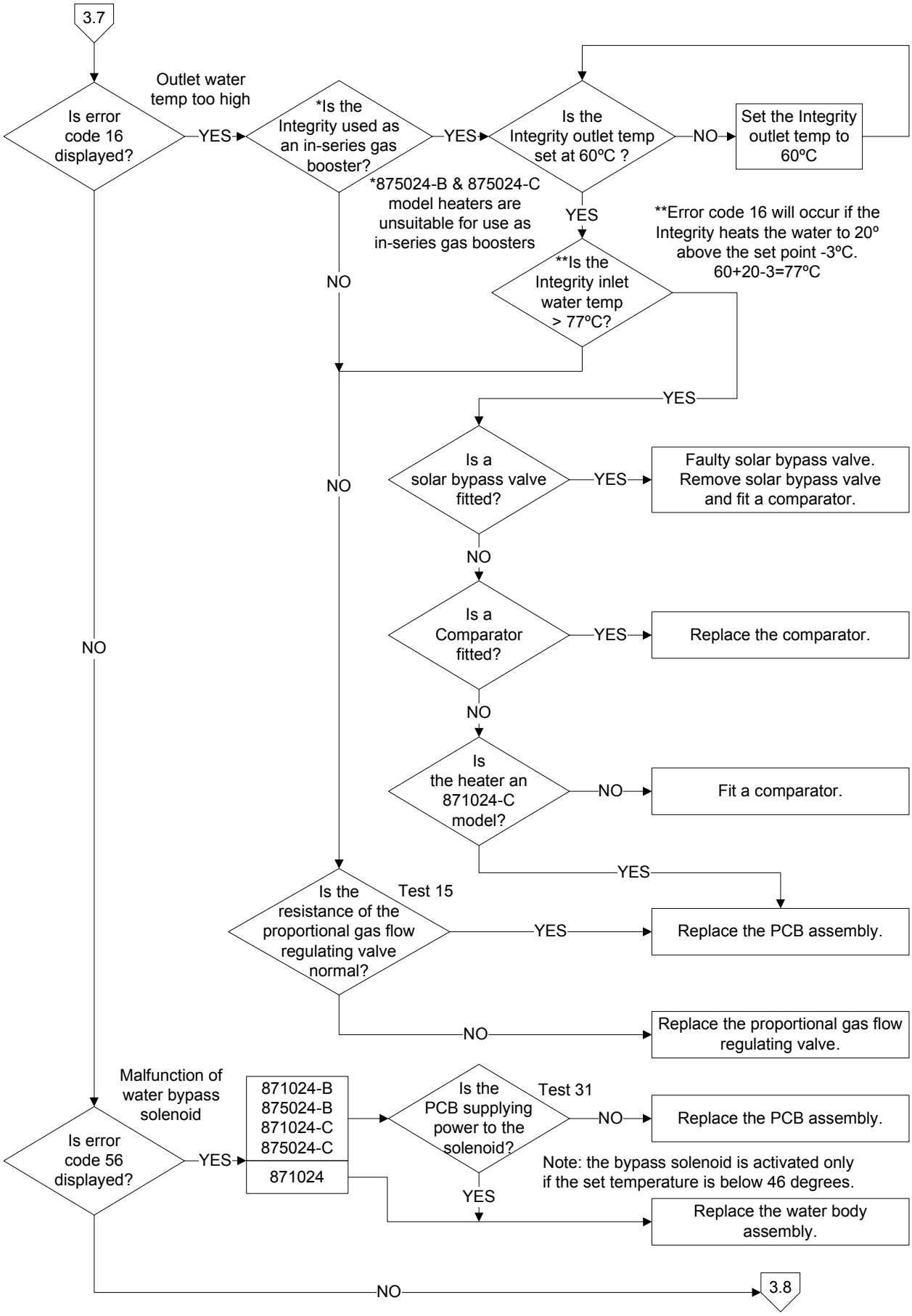
Fault Finding Chart 3.7



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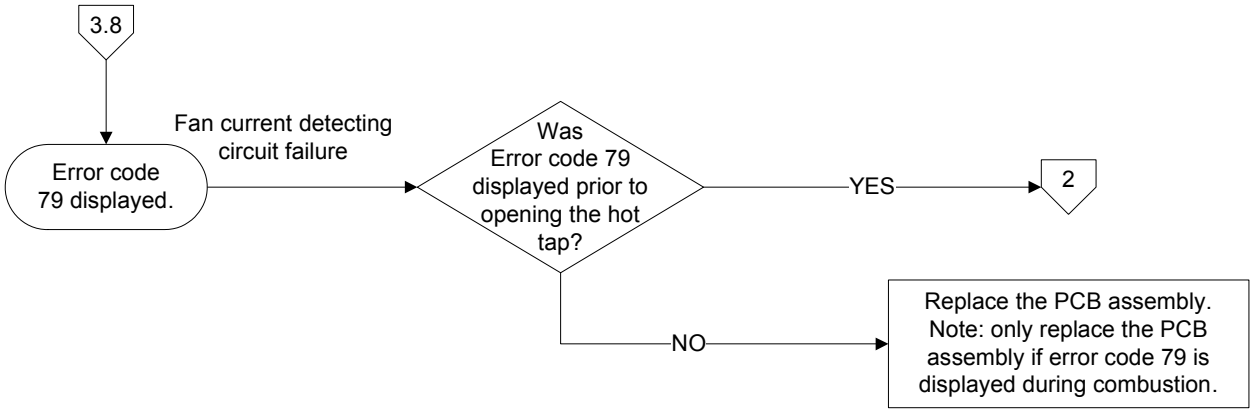
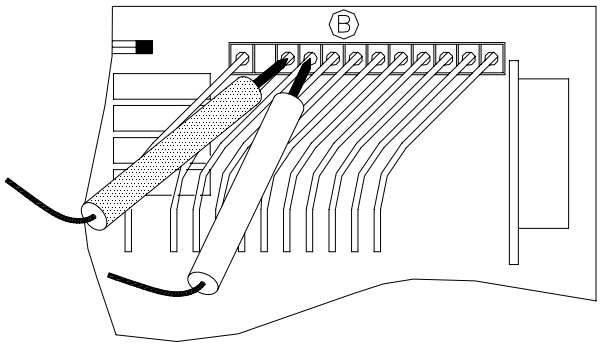
Fault Finding Chart 3.8


3.8
Error code 79 displayed.
Fan current detecting circuit failure
Was Error code 79 displayed prior to opening the hot tap?
YES
2
NO
Replace the PCB assembly. Note: only replace the PCB assembly if error code 79 is displayed during combustion.

Fault Finding Tests 29 – 31

Test 29 - Diagnostic Point 3



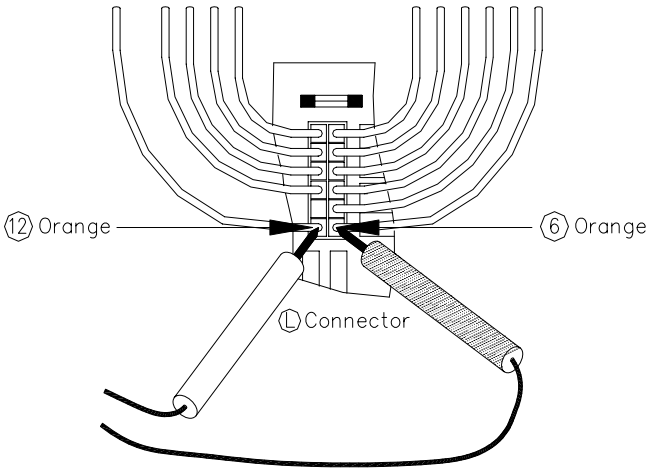
Components will be "Live" when conducting tests, exercise caution

Conduct test with water flowing

Measure the voltage between 9 Brown and 10 Black on connector B.

Voltage should be between DC2 – 5V

Test 30 and 31 - Diagnostic Point 19



Test 30

Isolate power when conducting resistance test.

Unplug connector L from the PCB and measure the resistance between 6 Orange and 12 Orange.

Resistance should be between 0.6kilo-ohms and 2.8kilo-ohms.

Test 31

Components will be "Live" when conducting tests, exercise caution

Conduct test with water flowing

Measure the voltage between 6 Orange and 12 Orange on connector L.

Voltage should be between DC70 – 110V

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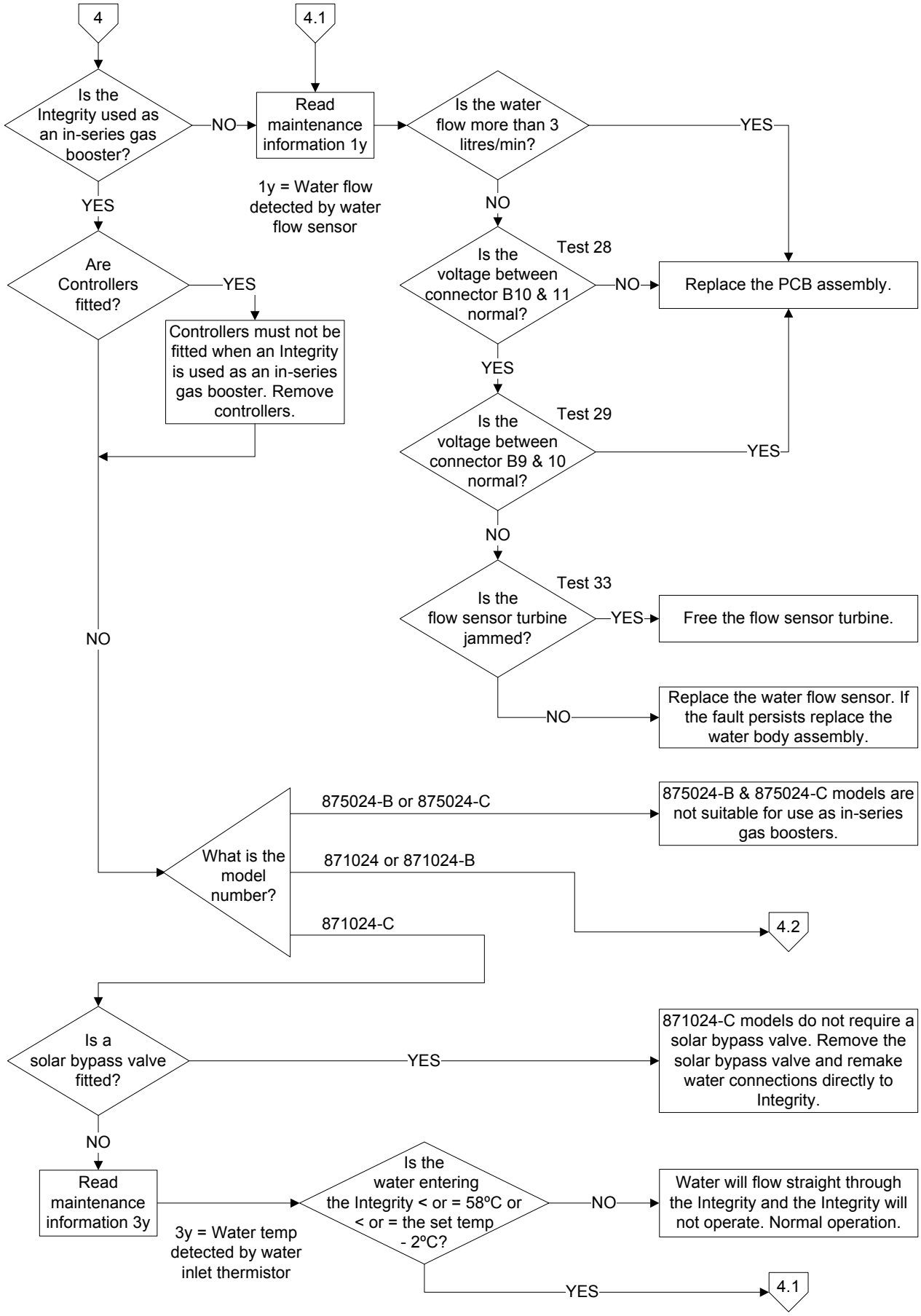
Fault Finding Charts 4 and 4.1


4
4.1
Is the Integrity used as an in-series gas booster?
NO
Read maintenance information 1y
1y = Water flow detected by water flow sensor
Is the water flow more than 3 litres/min?
YES
NO
YES
Are Controllers fitted?
YES
Controllers must not be fitted when an Integrity is used as an in-series gas booster. Remove controllers.
Test 28
Is the voltage between connector B10 & 11 normal?
NO
Replace the PCB assembly.
YES
Test 29
Is the voltage between connector B9 & 10 normal?
YES
NO
Test 33
Is the flow sensor turbine jammed?
YES
Free the flow sensor turbine.
NO
Replace the water flow sensor. If the fault persists replace the water body assembly.
NO
What is the model number?
875024-B or 875024-C
875024-B & 875024-C models are not suitable for use as in-series gas boosters.
871024 or 871024-B
4.2
871024-C
Is a solar bypass valve fitted?
YES
871024-C models do not require a solar bypass valve. Remove the solar bypass valve and remake water connections directly to Integrity.
NO
Read maintenance information 3y
3y = Water temp detected by water inlet thermistor
Is the water entering the Integrity < or = 58ºC or < or = the set temp - 2ºC?
NO
Water will flow straight through the Integrity and the Integrity will not operate. Normal operation.
YES
4.1

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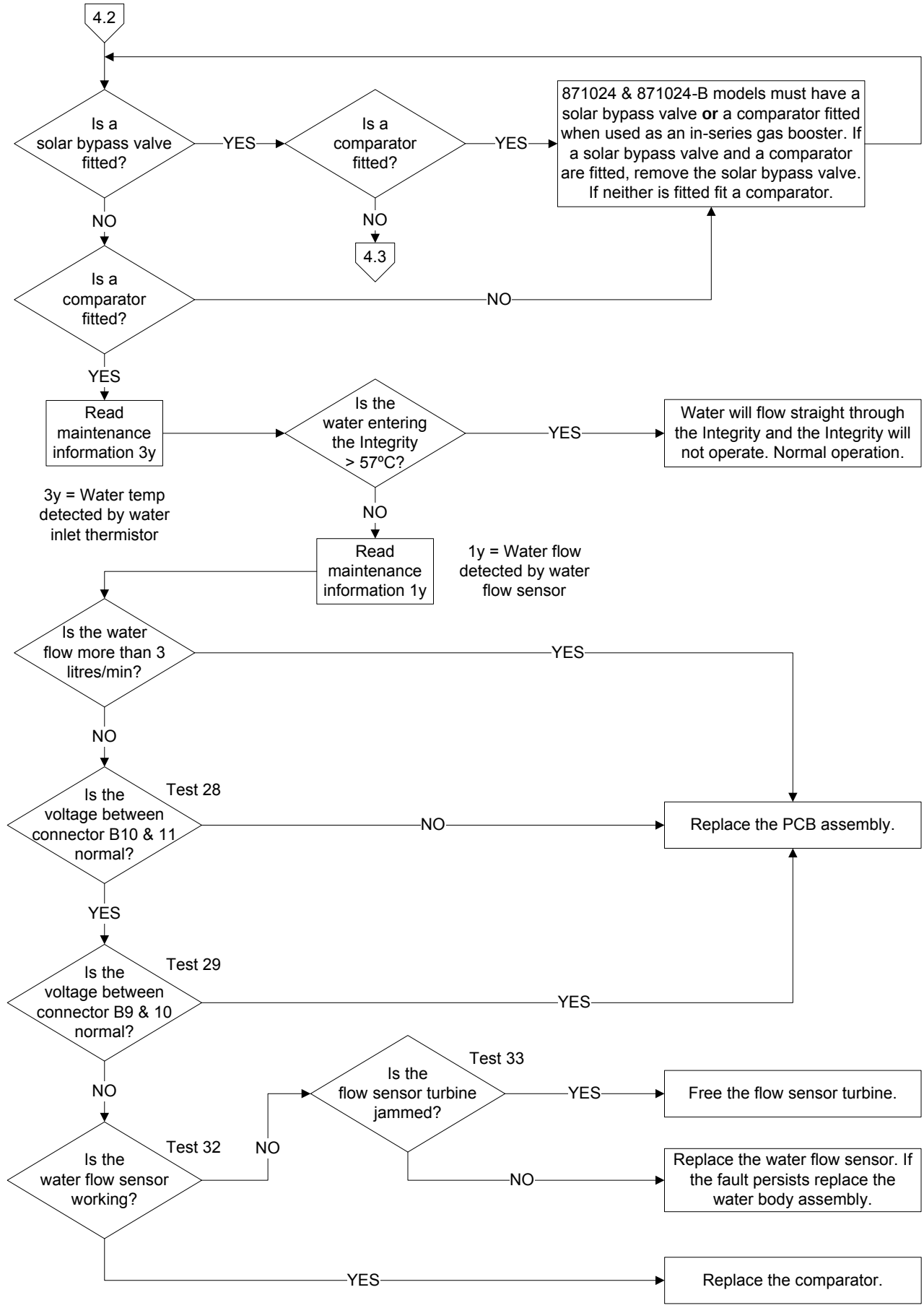
Fault Finding Chart 4.2


4.2
Is a solar bypass valve fitted?
YES
Is a comparator fitted?
YES
871024 & 871024-B models must have a solar bypass valve **or** a comparator fitted when used as an in-series gas booster. If a solar bypass valve and a comparator are fitted, remove the solar bypass valve. If neither is fitted fit a comparator.
NO
NO
4.3
Is a comparator fitted?
NO
YES
Read maintenance information 3y
Is the water entering the Integrity > 57ºC?
YES
Water will flow straight through the Integrity and the Integrity will not operate. Normal operation.
3y = Water temp detected by water inlet thermistor
NO
Read maintenance information 1y
1y = Water flow detected by water flow sensor
Is the water flow more than 3 litres/min?
YES
NO
Test 28
Is the voltage between connector B10 & 11 normal?
NO
Replace the PCB assembly.
YES
Test 29
Is the voltage between connector B9 & 10 normal?
YES
NO
Test 33
Is the flow sensor turbine jammed?
YES
Free the flow sensor turbine.
Test 32
Is the water flow sensor working?
NO
NO
Replace the water flow sensor. If the fault persists replace the water body assembly.
YES
Replace the comparator.

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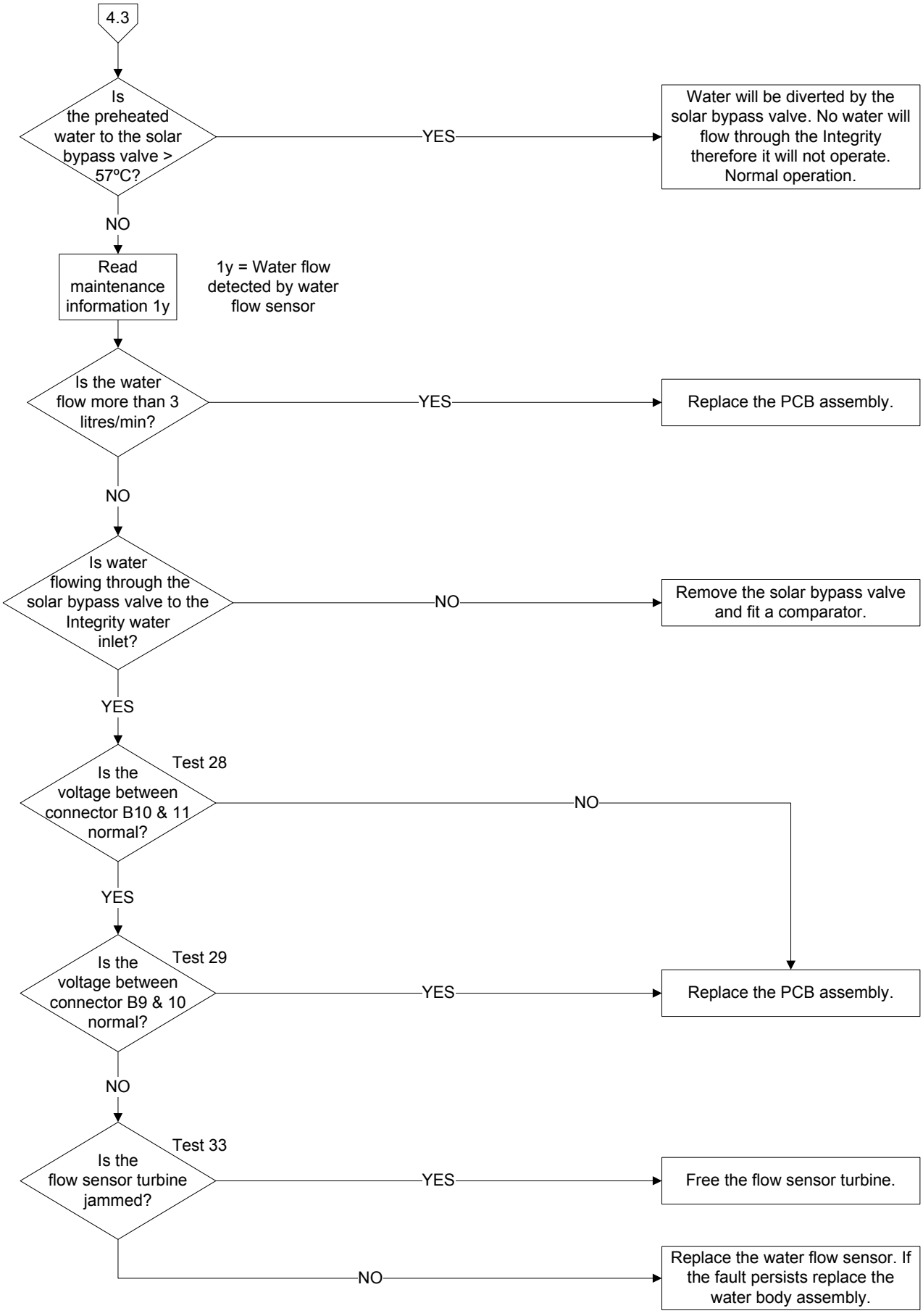
Fault Finding Chart 4.3


4.3
Is the preheated water to the solar bypass valve > 57ºC?
YES
Water will be diverted by the solar bypass valve. No water will flow through the Integrity therefore it will not operate. Normal operation.
NO
Read maintenance information 1y
1y = Water flow detected by water flow sensor
Is the water flow more than 3 litres/min?
YES
Replace the PCB assembly.
NO
Is water flowing through the solar bypass valve to the Integrity water inlet?
NO
Remove the solar bypass valve and fit a comparator.
YES
Test 28
Is the voltage between connector B10 & 11 normal?
NO
YES
Test 29
Is the voltage between connector B9 & 10 normal?
YES
Replace the PCB assembly.
NO
Test 33
Is the flow sensor turbine jammed?
YES
Free the flow sensor turbine.
NO
Replace the water flow sensor. If the fault persists replace the water body assembly.

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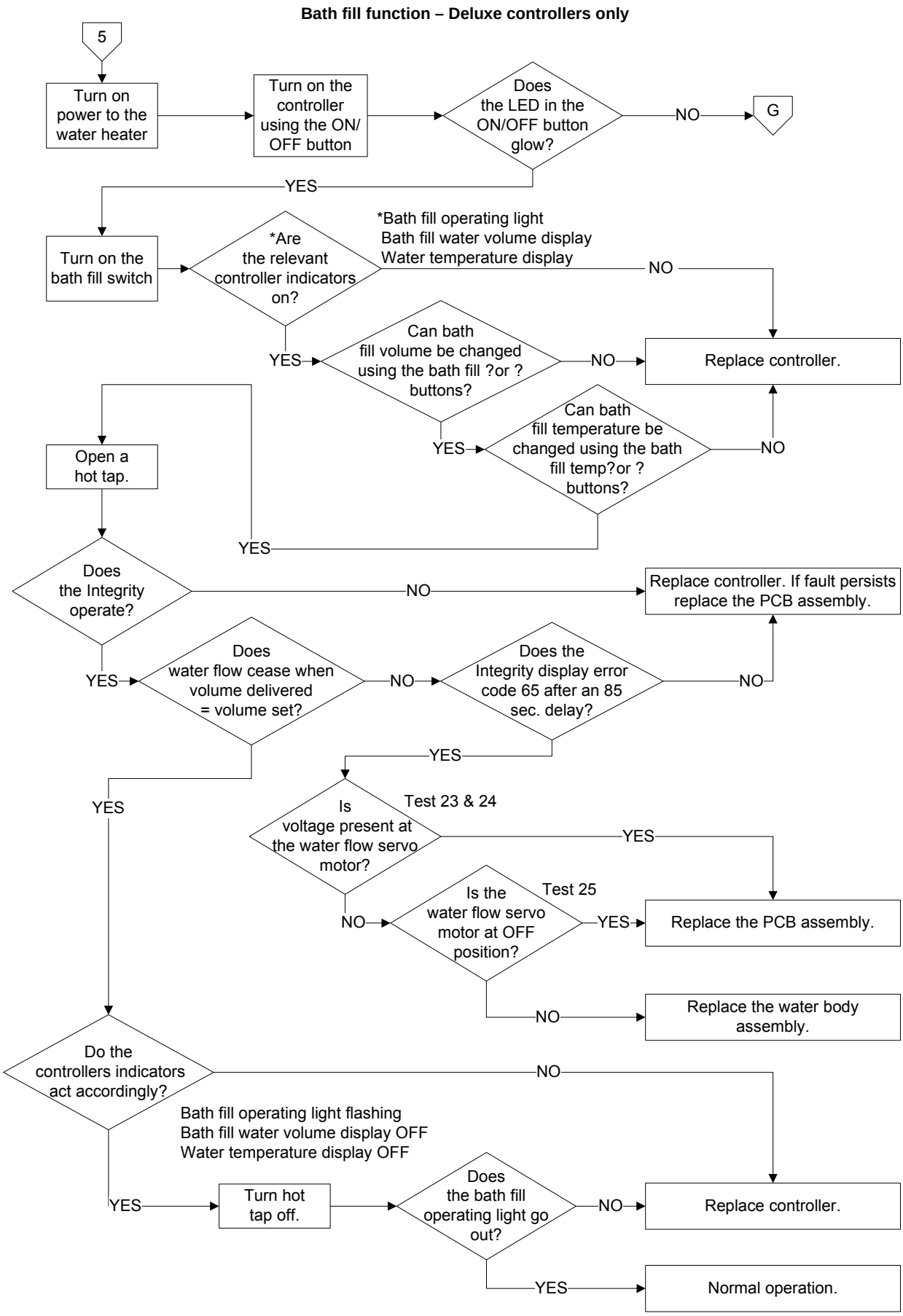
Fault Finding Chart 5



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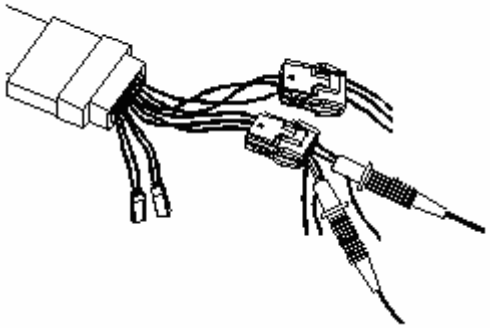
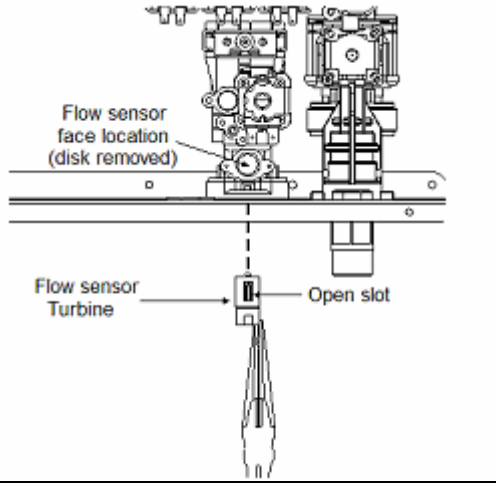
Fault Finding Tests 32 and 33

Test 32	
	***Components will be "Live" when conducting test, exercise caution*** Conduct test with water flowing Measure the voltage at the 3 pin connector located between the water flow sensor and the comparator. Measure the voltage between the brown and black wires at this connector. Voltage should be between DC2 – 5V.

Test 33	
	Remove flow sensor turbine by following component replacement procedure 21 on page 62. The flow sensor turbine should spin freely. Check for wear or blockage by foreign material such as thread tape.

Burner Gas Pressure Check

Voltages up to 240 volts will be present within the water heater, take care not to touch wiring terminals. Use an insulated tool when operating the DIP switch or MIN and MAX buttons.

Minimum Burner Gas Pressure

1. Remove the front panel from the water heater.
2. Remove burner test point screw and fit manometer.
3. Turn on the remote controller (If fitted).
4. Open a hot tap slowly, to achieve the minimum flow rate at which the burners will ignite.
5. Press and hold the MIN button ("1L" is displayed on the LED) and observe the reading on the manometer.
6. Release the MIN button. If the reading observed in step 5 agrees with the rating label, no further adjustment is required.

Maximum Burner Gas Pressure

7. Open the hot tap fully to achieve maximum flow rate.
8. Press and hold the MAX button ("4H" is displayed on the LED) and observe the reading on the manometer.
9. Release the MAX button. If the reading observed in step 8 agrees with the rating label, no further adjustment is required.
10. Turn the hot tap off.
11. Remove manometer and refit the burner test point screw ensuring the seal is gas tight.
12. Refit the front panel to the water heater.

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Adjustment

Adjustment of the burner pressure will not overcome problems associated with poor supply pressure or incorrect gas supply pipe sizing.

Minimum Burner Gas Pressure

1. Remove the front panel from the water heater.
2. Remove burner test point screw and fit manometer.
3. Turn on the remote controller (If fitted).
4. Open a hot tap slowly, to achieve the minimum flow rate at which the burners will ignite.
5. Press and hold the adjuster button ("LH" is displayed on the LED)
   NOTE: The adjuster button must be held down continuously through steps 5 and 6.
6. Press the MIN button and observe the reading on the manometer.
   NOTE: While the MIN button is pressed, the gas pressure will at first increase then decrease, cycling between an upper gas pressure limit (39 on LED display) and a lower gas pressure limit (01 on LED display).
7. Release the MIN and adjuster buttons when the minimum test point pressure shown on the manometer agrees with the rating label.

NOTE: If the burners extinguish or an error code starts to flash on the LED display during this procedure, release the MIN and adjuster buttons close the hot tap, clear the error code, turn on the water heater and recommence the procedure from step 3. To reset an error code, follow the procedure on page 35.

Maximum Burner Gas Pressure

8. Open the hot tap fully to achieve maximum flow rate.
9. Press and hold the adjuster button ("LH" is displayed on the LED).
   NOTE: The adjuster button must be held down continuously through steps 10 and 11.
10. Press the MAX button and observe the reading on the manometer.
    NOTE: While the MAX button is pressed, the gas pressure will at first increase then decrease, cycling between an upper gas pressure limit (39 on LED display) and a lower gas pressure limit (01 on LED display).
11. Release the MAX and adjuster buttons when the maximum test point pressure shown on the manometer agrees with the rating label.
12. Turn the hot tap off, remove manometer and refit the burner test point screw ensuring the seal is gas tight.
13. Refit the front panel to the water heater.

Component Replacement Procedures

Front Panel Removal: (Procedure 1)

1. ***Isolate power, gas and water supplies.***
2. Remove four screws, two from the top and two from the bottom of the front panel.
3. Remove the front panel.

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Burner Change-Over Assembly: (Procedure 2)

1. Remove the front panel. Refer to Procedure 1.
2. Disconnect the wiring plug from each of the solenoid valves. (**Note which plug goes to each valve**)
3. Remove the screw retaining the ignition pack to the Burner Change Over Assembly.
4. Remove the six screws retaining the Burner Change Over Assembly. Four from the Combustion Chamber Front Panel and two from the Proportional Gas Flow Regulating Valve Assembly.
5. Remove the Burner Change Over Assembly.
6. Reassemble in reverse order of above. Replace gaskets (item numbers 105 and 108) if required.
7. Test for gas leaks using soapy water solution

Combustion Chamber Front Panel Assembly: (Procedure 3)

1. Remove the front panel and Burner Change Over Assembly. Refer to Procedures 1 and 2.
2. Remove screws (14 off) retaining the Combustion Chamber Front Panel (12 screws around perimeter and 2 screws in centre).
3. Gently remove the Combustion Chamber Front Panel Assembly.
4. Reassemble in reverse order of above. Replace gaskets (item numbers 105 and 108) if required.
5. Test for gas leaks using soapy water solution.

Lower Burner Assembly: (Procedure 4)

1. Remove the front panel, Burner Change Over Assembly and Combustion Chamber Front Panel Assembly. Refer to Procedures 1, 2 and 3.
2. Remove the 2 screws retaining the Lower Burner Assembly.
3. Reassemble in reverse order of above. Replace gaskets (item numbers 105 and 108) if required.
4. Test for gas leaks using soapy water solution.

Upper Burner Assembly: (Procedure 5)

1. Remove the front panel, Burner Change Over Assembly, Combustion Chamber Front Panel Assembly and Lower Burner Assembly. Refer to Procedures 1, 2, 3 and 4.
2. Remove the Upper Burner Assembly by sliding forward out of the heat exchanger assembly.
3. Reassemble in reverse order of above being careful not to pinch or damage wiring. Replace gaskets (item numbers 105 and 108) if required.
4. Test for gas leaks using soapy water solution.

PCB Assembly: (Procedure 6)

1. Remove the front panel. Refer to Procedure 1.
2. Remove the screw retaining the PCB Assembly in the water heater.
3. Carefully remove the PCB Assembly complete.
4. Disconnect the multi-pin connectors from the PCB Assembly.
5. Remove the Gas Type Connector IC board and fit to replacement PCB Assembly.
6. Reassemble in reverse order of above.

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Proportional Gas Flow Regulating Valve: (Procedure 7)

1. Remove the front panel and Burner Change Over Assembly. Refer to Procedures 1 and 2.
2. Disconnect the gas supply pipe from the gas inlet connection.
3. Remove the three screws from the gas inlet connector and withdraw the connector and o-ring from the base of the water heater.
4. Carefully remove the Proportional Gas Flow Regulating Valve from the water heater.
5. Disconnect the multi-pin wiring plug from the Gas Inlet Solenoid Valve and the red and black wires from the proportioning valve. **Note: The proportional valve terminals are marked + for red and – for black.**
6. Reassemble in reverse order of above. Replace gaskets (item numbers 105 and 108) if required.
7. Test for gas leaks with soapy water solution.

Water Body Assembly: (Procedure 8)

Do not attempt to dismantle the servomotor, this is factory calibrated. Adjustments will render the water heater either inoperable or cause incorrect water temperature delivery.

1. Remove the front panel, Burner Change Over Assembly and Proportional Gas Flow Regulating Valve. Refer to Procedures 1, 2 and 6.
2. Disconnect the cold water supply pipe from the cold-water inlet connection.
3. Unscrew the water drain plug (item 405) and relief valve (item 431) and drain the water heater.
4. Remove the screw/s from the flange (item 419) and remove.
5. Carefully disengage the two pipes from the Water Body Assembly.
6. Disconnect the wiring to the bypass solenoid.
7. Remove the four screws from the cold water inlet connector and withdraw the connector and o-ring from the base of the water heater.
8. Carefully remove the Water Body Assembly from the water heater.
9. Disconnect the multi-pin connectors from the motor, flow sensor and cold water thermistor.
10. Remove the retaining screw from the anti-frost heater and remove. (If fitted)
11. Reassemble in reverse order of above, replacing pipe o'rings (item 427) if required.
12. Test for gas and water leaks.

Combustion Fan Motor: (Procedure 9)

1. Remove the front panel. Refer to Procedure 1.
2. Remove the screw retaining the Cord Connector, item 008.
3. Remove the screw retaining the Terminal Block Assembly, item 768.
4. Remove the screws retaining the mounting bracket for the transformer and the power filter to the Fan Motor Assembly and reposition the transformer and power filter temporarily.
5. Remove the remaining screw retaining the Fan Motor Assembly and lift the Fan Motor clear.
6. Disconnect the multi-pin wiring plug from the Fan Motor.
7. Reassemble in reverse order of above.

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Anti-Frost Heaters: (Procedure 10)

Note: Only models with an 'F' in the model number are fitted with anti-frost heaters e.g. 871024N**F**.

1. Remove the front panel. Refer to Procedure 1.

Heat Exchanger and Hot Water Outlet Connection Heaters

1. Disconnect connector plugs at the sensing thermostat and at the power cord.
2. Remove Flange (item 445) to release the Hot Water Outlet Anti-frost Heater.
3. Unclip the 2 anti-frost heaters from the heat exchanger (Note the positions of both).
4. Remove the Anti-frost Heaters and wiring (Some wiring retainers will need to be released to remove wiring).
5. Reassemble in reverse of above ensuring anti-frost heaters are fitted in correct positions.

Water Body Assembly Heater

1. Disconnect connector plugs at the cord set and at the sensing thermostat.
2. Remove the Water Body Assembly (item 410). Refer to Procedure 7.
3. Remove the Anti-frost Heater retaining clip.
4. Remove the Anti-frost Heater and wiring (Some wiring retainers will need to be released to remove wiring).
5. Reassemble in reverse order of above.

Heat Exchanger Removal/Replacement: (Procedure 11)

1. Follow the steps in Procedure 5, Upper Burner Assembly.
2. Remove the screw/s from the Water Body Assembly flange (item 419) and remove.
3. Carefully disengage the two pipes from the Water Body Assembly.
4. Remove the two screws from the hot water outlet flange (item 445) retaining the hot water outlet pipe and carefully disengage the pipe.
5. Undo the 2 screws retaining the heat exchanger thermistor and remove the thermistor.
6. Disconnect the wiring loom connector at the thermostat (item 714) and the hot water outlet heater (item 705).
7. Remove 5 screws retaining the heat exchanger assembly. One from each side of the heat exchanger, two screws from the bracket above the flue outlet and one screw from the fan case assembly (item 729).
8. Remove two screws retaining the bracket (above the flue terminal) and remove the bracket. (Note: The bracket is glued in place; a small amount of force is required to remove it).
9. Remove Heat Exchanger Assembly by gently moving the top forward out of the water heater then lift the assembly up and clear.
10. Disconnect the multi-pin wiring plug from the Fan Motor to completely free Heat Exchanger Assembly from water heater.
11. Remove the Anti-Frost Heaters (if fitted) and the Fan Motor and Cowling Assembly from the old Heat Exchanger and refit to the replacement Heat Exchanger Assembly.
12. Replace the Over Heat Limiter if damaged or open circuit.
13. Reassemble in reverse order of above.
14. Test for gas leaks using soapy water solution
15. Check for water leaks.
16. Check and if necessary adjust MIN and MAX burner gas pressures. Refer to Procedure on page 56.

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Ignition Pack Replacement: (Procedure 12)

1. Remove the front panel, Burner Change Over Assembly, Combustion Chamber Front Panel Assembly, Lower Burner Assembly and Upper Burner Assembly. Refer to Procedures 1, 2, 3, 4 and 5.
2. Disconnect high voltage lead from spark electrode.
3. Disconnect the multi pin connector from the Ignition Pack.
4. Remove the retaining screw.
5. Remove the Ignition Pack.
6. Reassemble in reverse order of above being careful not to pinch or damage wiring when replacing Upper Burner Assembly. Replace gaskets (item numbers 105 and 108) if required.
7. Test for gas leaks using soapy water solution.

Flow Sensor: (Procedure 13)

Note: When a flow sensor is installed as a spare part in an 871024, 871024-B or 875024-B model heater other interconnecting components will also require replacing. Refer to 'Product Changes' on page 10 and 'Parts Replacement Scenarios' on page 11 for more information.

1. Isolate cold water supply.
2. Remove the front panel. Refer to Procedure 1.
3. Disconnect the multi-pin plug to the flow sensor.
4. Remove 2 Philips head retaining screws.
5. Remove Flow Sensor (Note: Water may escape during this procedure).
6. Reassemble in reverse order of above.

Bypass Solenoid: (Procedure 14)

Note: Only models with a -B or -C suffix in the model number are fitted with a bypass solenoid e.g. 871024NF-B.

The bypass solenoid is only available as part of the water body assembly. Follow procedure 7.

Thermistors: (Procedure 15)

Note: When a thermistor(s) is installed as a spare part in an 871024, 871024-B or 875024-B model heater other interconnecting components will also require replacing. Refer to 'Product Changes' on page 10 and 'Parts Replacement Scenarios' on page 11 for more information.

1. Remove the front Panel. Refer to Procedure 1.
2. Relieve water pressure through a hot tap.
3. Locate the Thermistor requiring replacement.
4. Disconnect the multi-pin plug from the Thermistor.
5. Remove the retaining screws and withdraw the thermistor taking care not to damage the o'ring (Note: With the exception of the Ambient Air Thermistor, water may escape during this procedure).
6. Reassemble in reverse order of above.

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Over Heat Limiter Assembly: (Procedure 16)

Note: When an over heat limiter is installed as a spare part in an 871024, 871024-B or 875024-B model heater other interconnecting components will also require replacing. Refer to 'Product Changes' on page 10 and 'Parts Replacement Scenarios' on page 11 for more information.

Replacement of the Over Heat Limiter requires removal and possible replacement of the Heat Exchanger.

1. Follow Procedure 11 to step 10.
2. Disconnect the multi-pin plug to the Over Heat Limiter Assembly.
3. Remove the screws retaining the Over Heat Limiter Assembly to the Jacket back and remove the Over Heat Limiter Assembly.
4. Inspect the heat exchanger for holes or combustion damage.
5. Reassemble in reverse order of above (Note: Ensure all multi-pin plugs are reconnected and all wiring is neatly repositioned and retained to prevent damage during operation).
6. Test operation of water heater and ensure the MIN and MAX burner gas pressures are correct. Refer to Procedure on page 56.

Remote Controller: (Procedure 17)

1. ***Isolate power at the water heater.***
2. Remove the small Philips head screw from the bottom of the Remote Controller.
3. Gently pivot the Remote Controller up from the bottom and then lift up and off upper retaining lugs.
4. **Kitchen Controller:** Disconnect the wiring from the terminals on the back of the Controller (Note: The wiring is not polarity sensitive).
   Bathroom Controllers: Disconnect the multi-pin plug.
5. Reassemble in reverse order of above.

Gas Type Circuit Board: (Procedure 18)

1. Remove the front panel. Refer to Procedure 1.
2. Gently unplug the Gas Type Circuit Board from the PCB.
3. Reassemble in reverse order of above.
4. Restore power.
5. Press the MAX button. On all 871024 & 875024 models 4H should be displayed.
6. Test operation of water heater and ensure the MIN and MAX burner gas pressures are correct. Refer to Procedure on page 56.

Transformer: (Procedure 19)

Note: When a transformer is installed as a spare part in an 871024, 871024-B or 875024-B model heater other interconnecting components will also require replacing. Refer to 'Product Changes' on page 10 and 'Parts Replacement Scenarios' on page 11 for more information.

1. Remove the front panel. Refer to Procedure 1.
2. Disconnect the primary and secondary winding multi-pin plugs to the Transformer.
3. Remove the 2 Philips head screws retaining the Transformer.
4. Reassemble in reverse order of above.

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Power Filter: (Procedure 20)

Note: When a power filter is installed as a spare part in an 871024, 871024-B or 875024-B model heater other interconnecting components will also require replacing. Refer to 'Product Changes' on page 10 and 'Parts Replacement Scenarios' on page 11 for more information.

1. Remove the front panel. Refer to Procedure 1.
2. Disconnect the incoming and outgoing wiring loom plugs.
3. Remove the 2 Philips head screws retaining the filter to the mounting bracket.
4. Remove the Power Filter.
5. Reassemble in reverse order of above.

Solar Bypass Valve: (Procedure 21)

Solar bypass valves are no longer available and if faulty are to be removed and a Comparator installed. Refer to page 18 for the procedure on installing a comparator. **NOTE:** 24L models with a -C suffix in the model number do not require either a bypass valve or a comparator.

Flow Sensor Turbine: (Procedure 21)

1. Isolate cold water supply.
2. Remove the front panel. Refer to Procedure 1.
3. Unscrew the water drain plug (item 405) and relief valve (item 431) and drain the water heater.
4. Disconnect the cold water supply pipe from the cold-water inlet connection.
5. Disconnect the bypass solenoid wiring loom plug.
6. Remove 2 Philips head retaining screws holding flow sensor to water body assembly and remove flow sensor.
7. Using a flat bladed screwdriver lever the metal disc and o'ring from flow sensor housing on water body assembly. Lever the disc out by placing the shaft of the screwdriver across the disc with the tip of the screwdriver on the far inside edge of the disc.
8. Remove the four screws from the cold water inlet connector and withdraw the connector and o'ring from the base of the water heater.
9. Gently withdraw flow sensor turbine out from water inlet of water body assembly using a pair of long nose pliers.
10. Reassemble in reverse order of above ensuring open slot on turbine is centred and facing towards the face of the flow sensor.

Power cord: (Procedure 22)

Note: When a power cord is installed as a spare part in an 871024, 871024-B or 875024-B model heater other interconnecting components will also require replacing. Refer to 'Product Changes' on page 10 and 'Parts Replacement Scenarios' on page 11 for more information.

1. ***Switch off power at power point and unplug power cord from power point.***
2. Unscrew screw on power inlet cover and remove power inlet cover.
3. Undo cord clamp screw located next to power filter and remove clamp.
4. Disconnect the power cable wiring loom plug and withdraw power cable through slot in heater jacket.
5. Reassemble in reverse order of above.

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Connecting cord: (Procedure 22)

Note: When a connecting cord is installed as a spare part in an 871024, 871024-B or 875024-B model heater other interconnecting components will also require replacing. Refer to 'Product Changes' on page 10 and 'Parts Replacement Scenarios' on page 11 for more information.

1. ***Isolate power at the water heater.***
2. Disconnect connecting cord wiring loom plug to power cord.
3. Disconnect remaining two connecting cord wiring loom plugs and remove connecting cord.
4. Reassemble in reverse order of above.

Nozzle Plate - NG appliances only: (Procedure 23)

1. Remove the front panel, Burner Change Over Assembly, Combustion Chamber Front Panel Assembly and Lower Burner Assembly. Refer to Procedures 1, 2, 3 & 4.
2. Remove the three screws retaining the nozzle plate and remove nozzle plate.
3. Reassemble in reverse order of above. Replace gaskets (item numbers 105 and 108) if required.
4. Test for gas leaks using soapy water solution.

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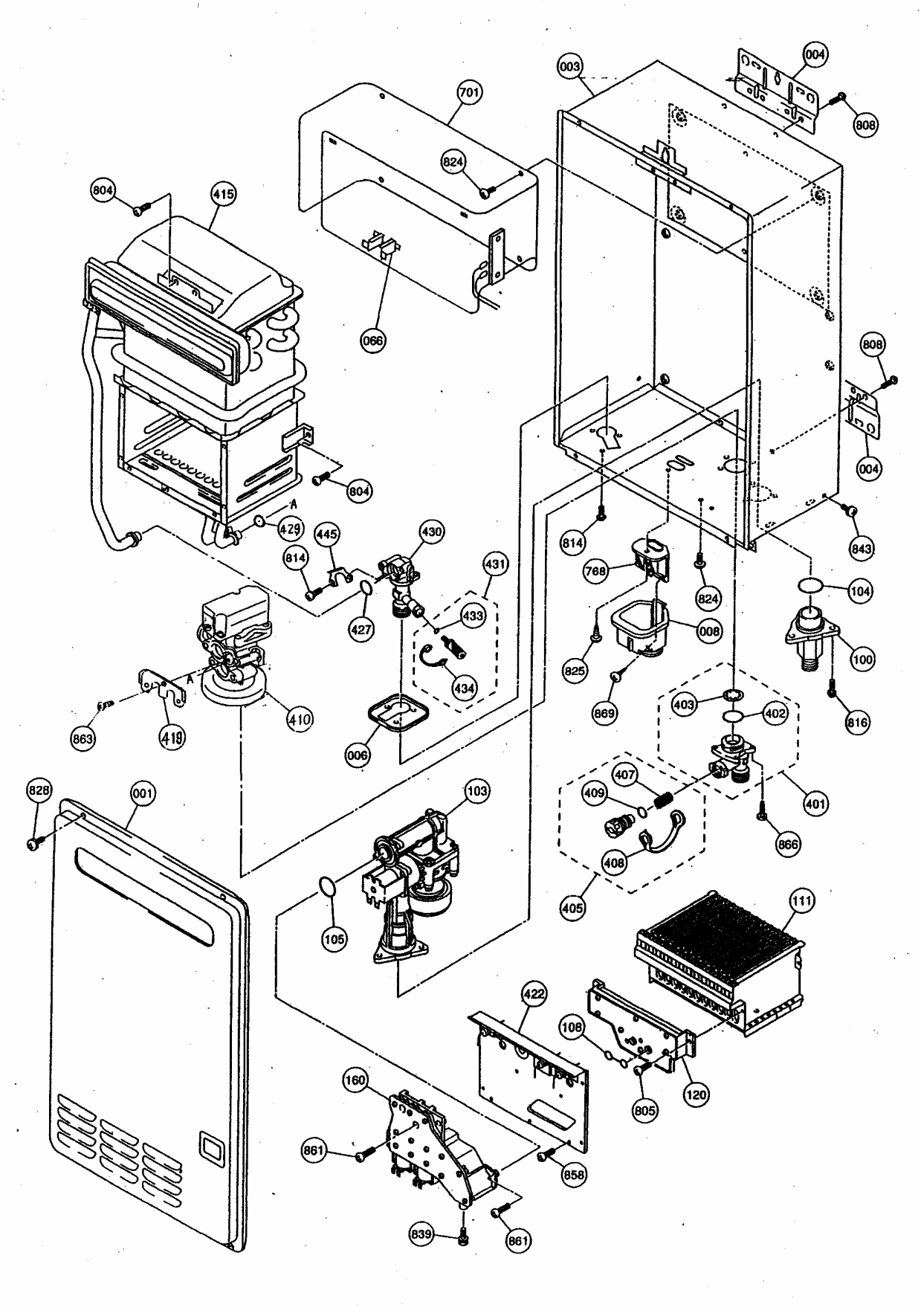
Exploded View 1 - 871024 Models



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Replacement Parts List Exploded View 1 - 871024 Models

Ref. No.	Description	871024
001	Front Panel Assembly	31-76496-00
003	Jacket Assembly	31-23525-00
004	Mounting Bracket	WH0020002
006	Reinforcing Plate	WH0020003
008	Cord Connector	WH0020004
066	Fixing Plate B	WH0020005
100	Gas Inlet Connector ¾"	31-76255-00
103	Proportional Gas Flow Regulating Valve	WH0020007
104	O'ring	WH0020009
105	Gasket	WH0020010
108	Gasket	WH0020012
111	Upper Burner Assembly	WH0020014
120	Lower Burner Assembly - NG	WH0020016
120	Lower Burner Assembly - LP	WH0020018
160	Burner Change-Over Assembly	WH0020020
401	Water Inlet Connector Assembly (¾)	10-65408-00
402	O'ring	WH0020022
403	CS Type Snap Ring	WH0020023
405	Water Drain Valve Assembly (includes water filter)	WH0020024
407	Water Filter	21-14774-00
408	Plug Band	21-35376-00
409	O'ring	WH0020027
410	Water Body Assembly	WH0020028
415	Heat Exchanger and Combustion Chamber Kit	WH0020030
419	Flange	WH0020031
422	Combustion Chamber Front Panel Assembly	WH0020033
427	O'ring	WH0020034
429	O'ring	WH0020035
430	Hot water Outlet Connector (¾)	31-20192-00
431	Relief Valve Assembly	04-04764-00
433	O'ring	WH0020038
434	Safety Valve Band	WH0020039
445	Flange	WH0020040
701	Over Heat Limiter Assembly	*31-79562-00
768	Terminal Block Assembly	WH0020043
828	Truss Gasket Screw 4 x 10	09-14144-00

*When installed in an 871024, 871024-B or 875024-B model heater these parts will require the replacement of other interconnecting components. Refer to 'Product Changes' on page 10 and 'Parts Replacement Scenarios' on page 11 for more information.

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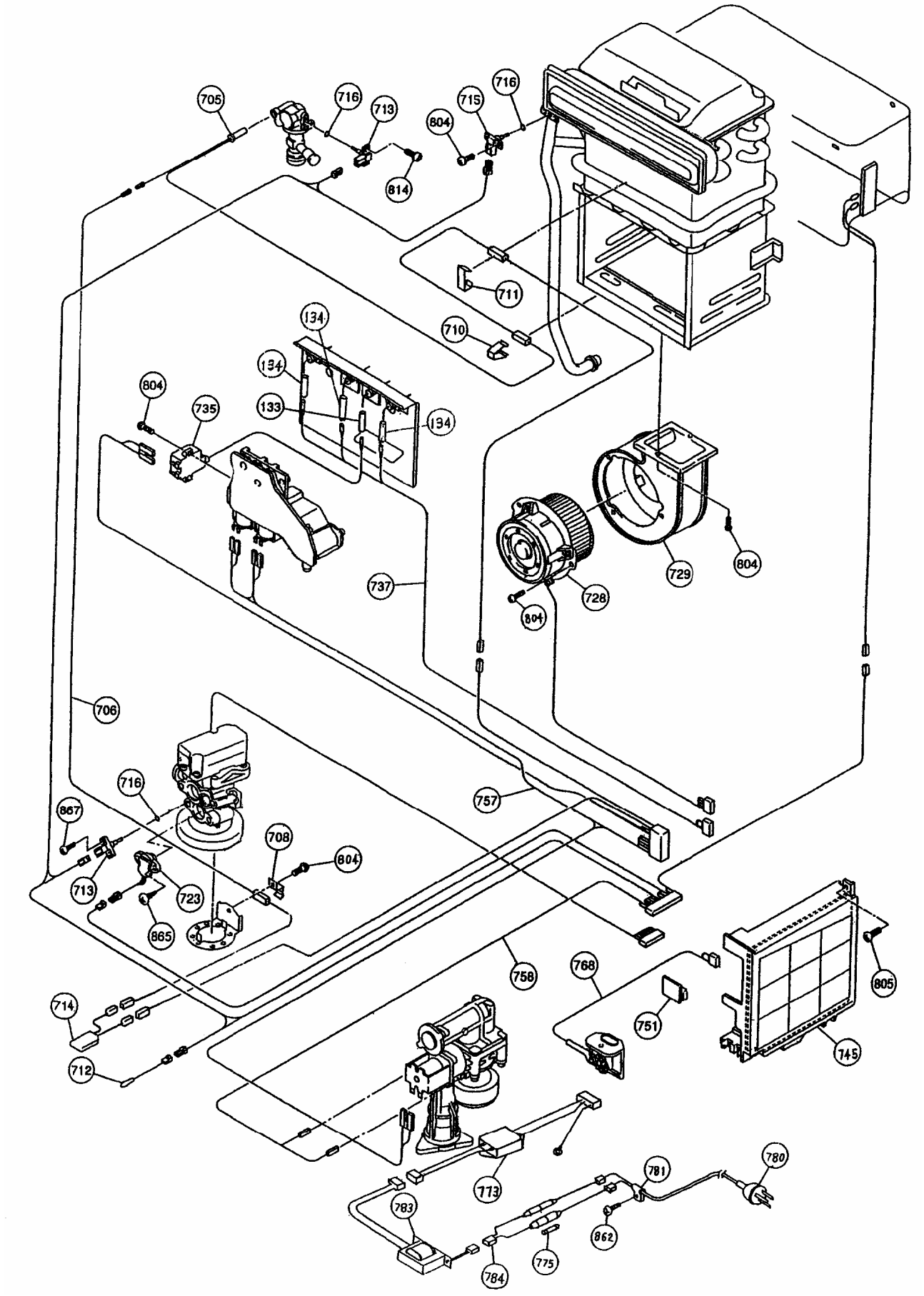
Exploded View 2 - 871024 Models



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Replacement Parts List Exploded View 2 - 871024 Models

Ref. No.	Description	871024
133	Silicone Tube (Insulator)	20-43376-00
134	Silicone Tube (Insulator)	20-43376-00
705	Anti-Frost Heater (Heater A) (Anti-frost models only)	31-71644-00
706	Anti-Frost Heater (heater B) (Anti-frost models only)	37-71643-00
708	Anti-Frost Heater Clamp (Anti-frost models only)	WH0020049
710	Anti-Frost Heater “C” Clamp (Anti-frost models only)	WH0020050
711	Anti-Frost Heater Clamp (Anti-frost models only)	WH0020051
712	Ambient Air Temp Thermistor Assy	N/A use *37-76655-00
713	Outlet Thermistor (Thermistor B)	*20-64774-00
714	Anti-frost Thermostat Assembly (Anti-frost models only)	20-57072-00
715	Heat Exchanger (HX) Thermistor	N/A use *31-76655-00
716	O’ring – Thermistor	WH0020055
723	Hall Effect I.C. Assembly	*20-43805-00
728	Combustion Fan	WH0020057
729	Fan Case Assembly	10-88629-00
735	Ignition Pack	31-76722-00
737	Flame Sensor Loom	31-76721-00
745	PCB Assembly	31-76623-0S
751	Gas Type Connector - NG	WH0020063
	Gas Type Connector - LP	WH0020078
757	100 volt loom	31-76653-00
758	Signal Loom (inc amb air & HX thermistor)	*31-76655-00
768	Terminal Block Assembly	WH0020068
771	Noise filter holder assembly	31-23360-00
773	Power filter	*31-71642-00
775	Fuse - In line **Note:** PCB fuses not fitted	WH0020069
780	Power Cord With Clamp	*31-76652-00
781	Clamp – Power Cord	WH0020072
783	240 -110 Volt Transformer Assembly	*31-71646-00
784	Connecting cord	*31-71641-00

Not Shown	Gas Conversion Kit - LP to NG	WH0020075
Not Shown	Gas Conversion Kit - NG to LP	WH0020077

*When installed in an 871024, 871024-B or 875024-B model heater these parts will require the replacement of other interconnecting components. Refer to ‘Product Changes’ on page 10 and ‘Parts Replacement Scenarios’ on page 11 for more information.

Note: For controller and controller cable part numbers refer to page 20

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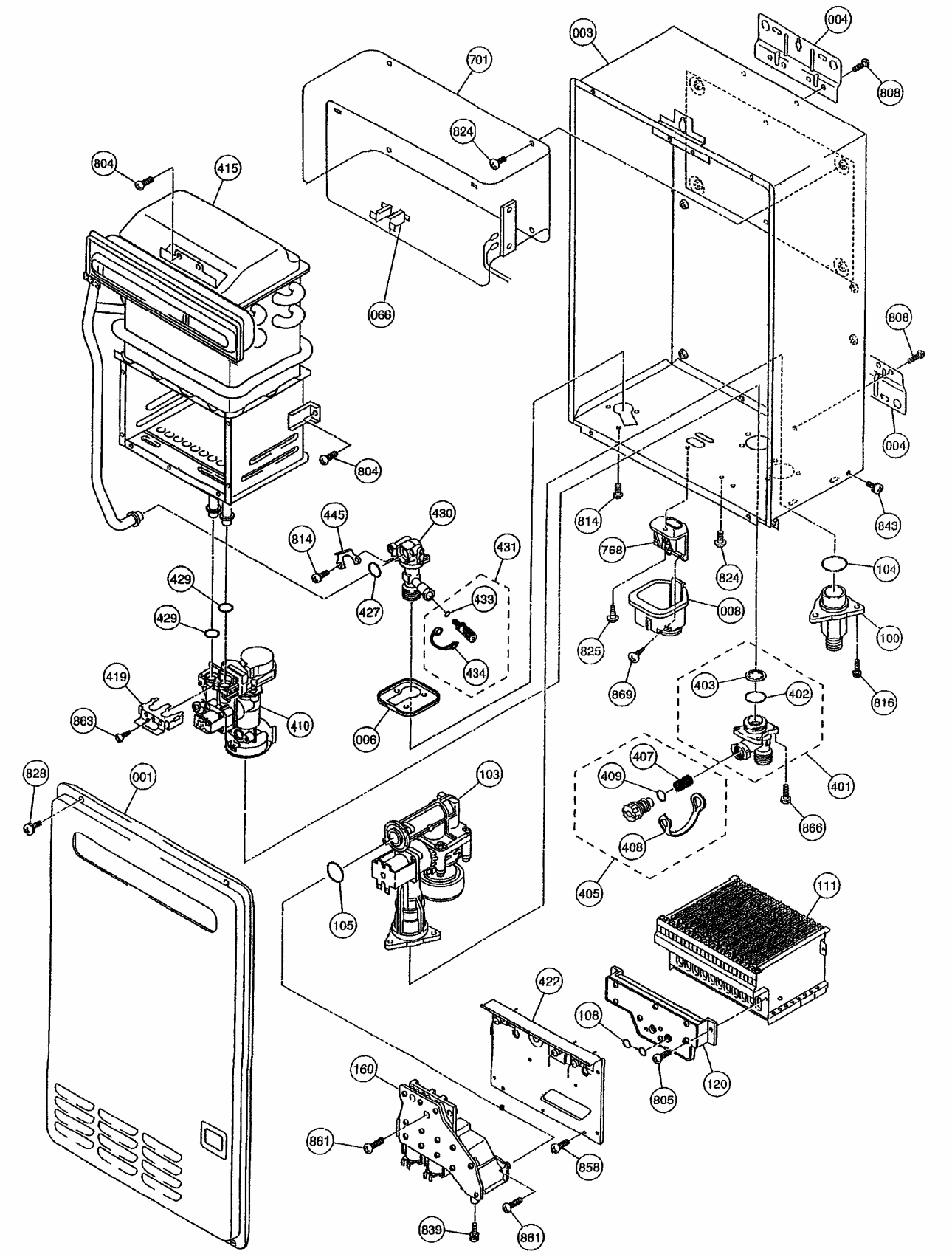
Exploded View 3 - 871024-B & 875024-B Models

Fitted with solenoid operated bypass



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Replacement Parts List Exploded View 3 - 871024-B & 875024-B Models

Fitted with solenoid operated bypass

Ref. No.	*Description*	875024-B	871024-B
001	Front Panel Rheem Brand (50 & 60ºC Models)	31-76496-00	
	Front Panel Everhot Brand (50 & 60ºC Models)	31-76498-00	
003	Jacket Assembly	31-23525-00	
004	Mounting Bracket	WH0020002	
006	Reinforcing Plate	WH0020003	
008	Cord Connector	WH0020004	
066	Fixing Plate B	WH0020005	
100	Gas Inlet Connector ¾"	31-76255-00	
103	Proportional Gas Flow Regulating Valve	WH0020176	
104	O-ring	WH0020009	
105	Gasket	WH0020010	
108	Gasket	WH0020012	
111	Upper Burner Assembly	WH0020014	
120	Lower Burner Assembly - NG	WH0020016	
120	Lower Burner Assembly - LP	WH0020018	
160	Burner Change-Over Assy (Including solenoids)	WH0020020	
401	Water Inlet Connector Assembly (¾)	10-65408-00	
402	O-ring	WH0020022	
403	CS Type Snap Ring	WH0020023	
405	Water Drain Valve Assy (includes water filter)	WH0020024	
407	Water Filter	21-14774-00	
408	Plug Band	21-35376-00	
409	O-ring	WH0020027	
410	Water Body Assembly including solenoid bypass	WH0020177	
415	Heat Exchanger and Combustion Chamber Kit	WH0020179	
419	Flange	WH0020031	
422	Combustion Chamber Front Panel Assembly	WH0020033	
427	O-ring	WH0020034	
429	O-ring	WH0020035	
430	Hot water Outlet Connector (¾)	31-20192-00	
431	Relief Valve Assembly	04-04764-00	
433	O-ring	WH0020038	
434	Safety Valve Band	WH0020039	
445	Flange	WH0020040	
701	Over Heat Limiter Assembly	*31-79562-00	
768	Terminal Block Assembly	WH0020043	
828	Truss Gasket Screw 4 x 10	09-14144-00	

*When installed in an 871024, 871024-B or 875024-B model heater these parts will require the replacement of other interconnecting components. Refer to 'Product Changes' on page 10 and 'Parts Replacement Scenarios' on page 11 for more information.

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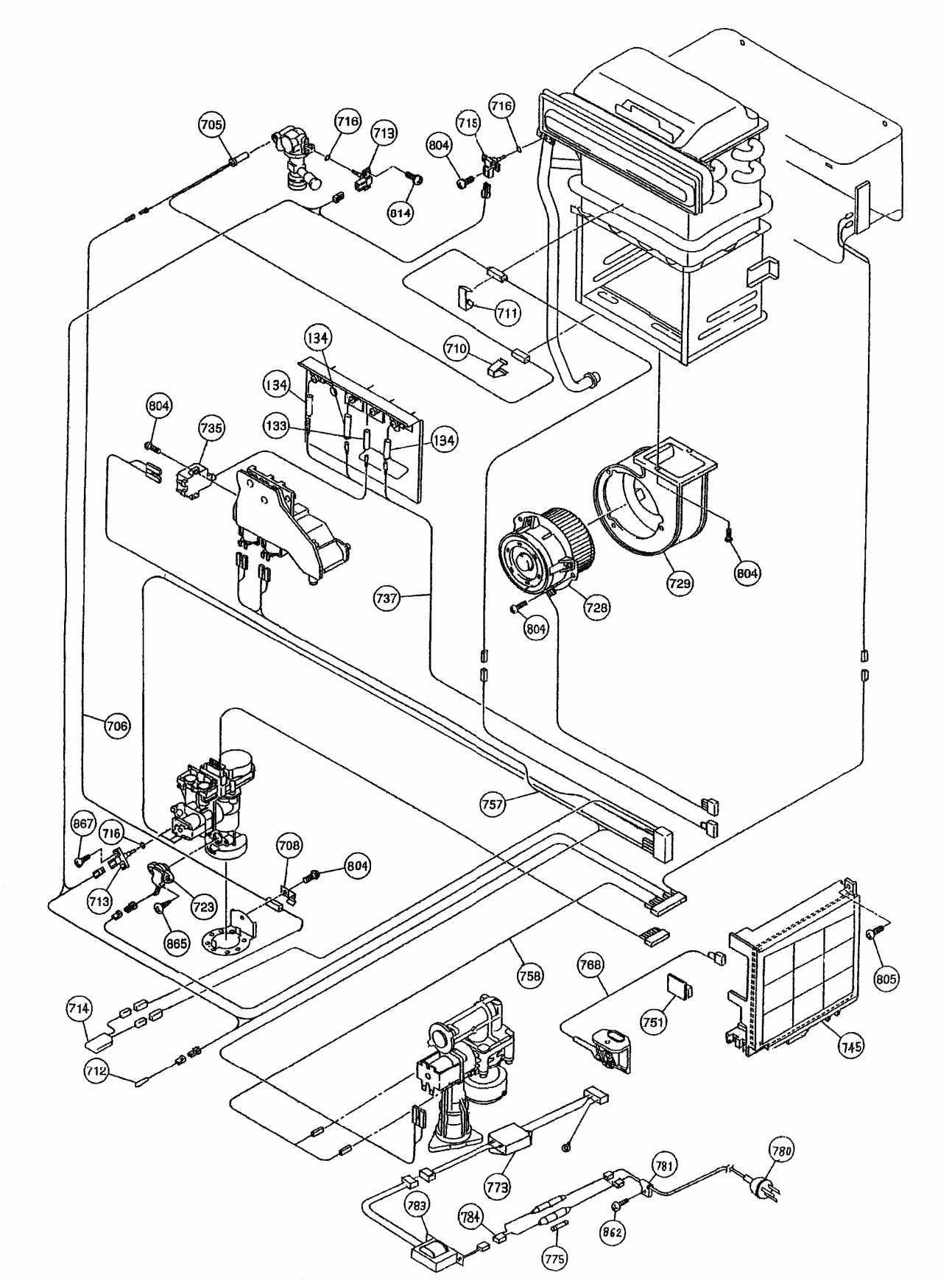
Exploded View 4 - 871024-B & 875024-B Models

Fitted with solenoid operated bypass



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Replacement Parts List Exploded View 4 - 871024-B & 875024-B Models

Fitted with solenoid operated bypass

Ref. No.	*Description*	875024-B	871024-B
133	Silicone Tube (Insulator)	20-43376-00	
134	Silicone Tube (Insulator)	20-43376-00	
705	Anti-Frost Heater (Heater A)	31-71644-00	
706	Anti-Frost Heater Assembly (heater B)	37-71643-00	
708	Anti-Frost Heater Clamp	WH0020049	
710	Anti-Frost Heater “C” Clamp	WH0020050	
711	Anti-Frost Heater Clamp	WH0020051	
712	Ambient Air Temp Thermistor Assy	N/A use *37-76655-00	
713	Outlet Thermistor (Thermistor B)	*20-64774-00	
714	Anti-frost Thermostat Assembly	20-57072-00	
715	Heat Exchanger (HX) Thermistor	N/A use *31-76655-00	
716	O-ring – Thermistor	WH0020055	
723	Hall Effect I.C. Assembly	*20-43805-00	
728	Combustion Fan	WH0020057	
729	Fan Case Assembly	10-88629-00	
735	Ignition Pack	31-76722-00	
737	Flame Sensor Loom	31-76721-00	
745	PCB Assembly	31-76623-0S	
751	Gas Type Connector - NG	WH0020197	WH0020186
	Gas Type Connector - LP	31-23681-00	WH0020185
757	100 volt loom	31-76653-00	
758	Signal Loom (inc amb air & HX thermistor)	*31-76655-00	
768	Terminal Block Assembly	WH0020068	
771	Noise filter holder assembly	31-23360-00	
773	Power filter	*31-71642-00	
775	Fuse – In line **Note:** PCB fuses not fitted	WH0020069	
780	Power Cord With Clamp	*31-76652-00	
781	Clamp – Power Cord	WH0020072	
783	240 -110 Volt Transformer Assembly	*31-71646-00	
784	Connecting cord	*31-71641-00	

Not Shown	Gas Conversion Kit - LP to NG	WH0020197 + WH0020016	WH0020189
Not Shown	Gas Conversion Kit - NG to LP	31-23681-00 + WH0020018	WH0020191

*When installed in an 871024, 871024-B or 875024-B model heater these parts will require the replacement of other interconnecting components. Refer to ‘Product Changes’ on page 10 and ‘Parts Replacement Scenarios’ on page 11 for more information.

Note: For controller and controller cable part numbers refer to page 20

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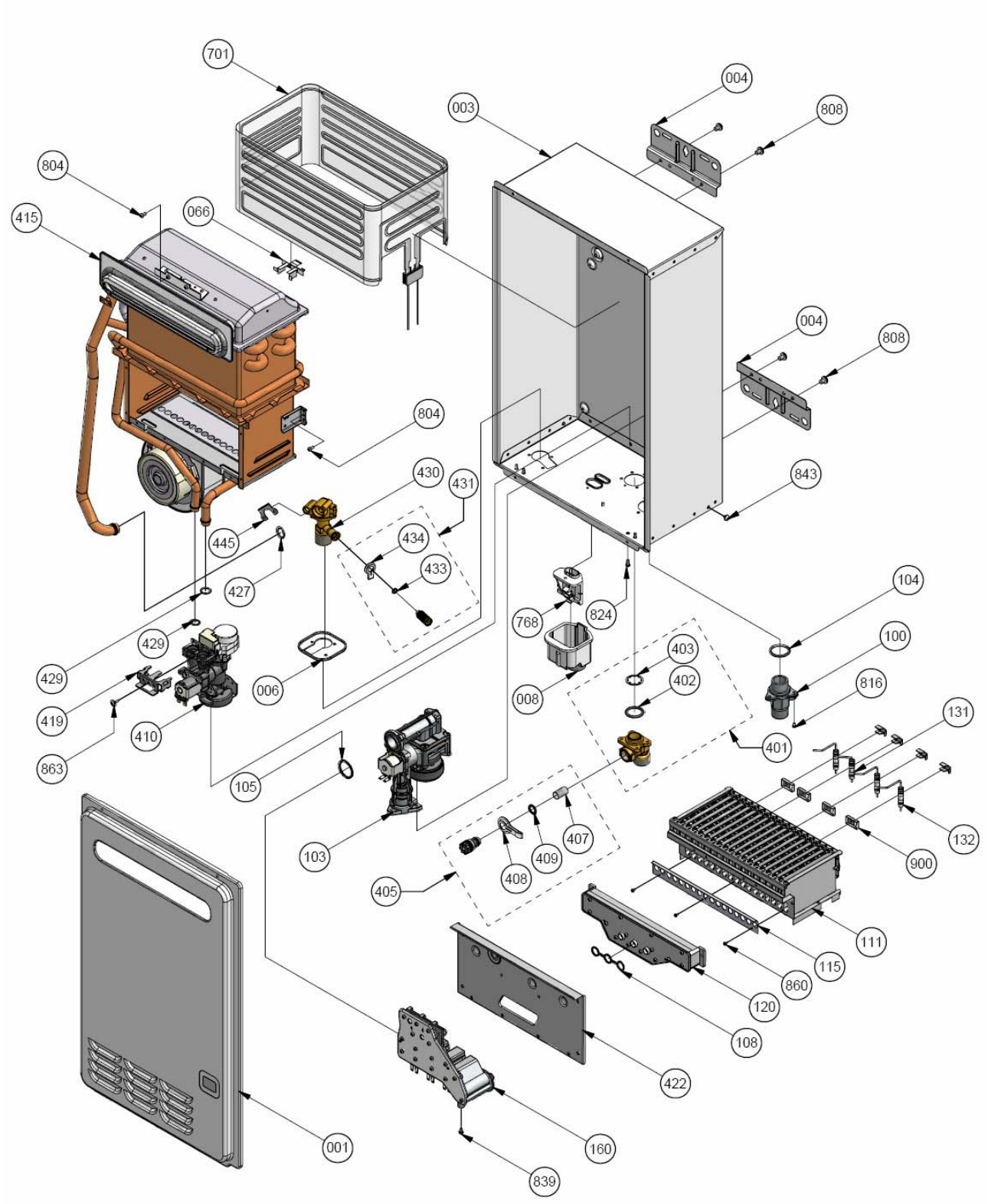
Exploded View 5 - 871024-C & 875024-C Models

Fitted with solenoid operated bypass



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Replacement Parts List Exploded View 5 - 871024-C & 875024-C Models

Fitted with solenoid operated bypass

Item No	Description	875024-C	871024-C
001	Front Panel Rheem Brand (50 & 60ºC Models)	31-76496-00	
003	Jacket Assembly	31-23525-00	
004	Mounting Bracket	WH0020002	
006	Reinforcing Plate	WH0020003	
008	Cord Connector	WH0020004	
066	Fixing Plate B	WH0020005	
100	Gas Inlet Connector ¾"	31-76255-00	
103	Proportional Gas Flow Regulating Valve	54-02340-00	
104	O-ring	WH0020009	
105	Gasket	WH0020010	
108	Gasket	WH0020012	
111	Upper Burner Assembly	31-76231-00	
115	Nozzle Plate - NG	31-76238-00	
	Nozzle Plate - LP	N/A	
120	Lower Burner Assembly - NG	31-76241-00	
	Lower Burner Assembly - LP	31-76240-00	
131	Electrode	31-76236-00	
132	Flame rod assembly (3 x flame rods)	31-76237-00	
160	Burner Change-Over Assembly	WH0020020	
401	Water Inlet Connector Assembly 26 L (¾)	10-65408-00	
402	O-ring	WH0020022	
403	CS Type Snap Ring	WH0020023	
405	Water Drain Valve Assy (includes water filter)	WH0020024	
407	Water Filter	21-14774-00	
408	Plug Band	21-35376-00	
409	O-ring	WH0020027	
410	Water Body Assy including solenoid bypass	31-76658-00	
415	Heat Exchanger and Combustion Chamber	31-76500-00	
419	Flange	10-88332-00	
422	Combustion Chamber Front Panel Assembly	10-89636-00	
427	O-ring	WH0020034	
429	O-ring	WH0020035	
430	Hot water Outlet Connector (¾)	31-20192-00	
431	Relief Valve Assembly	04-04764-00	
433	O-ring	WH0020038	
434	Safety Valve Band	WH0020039	
445	Flange	WH0020040	
701	Over Heat Limiter Assembly	*31-79562-00	
768	Terminal Block Assembly	WH0020068	
828	Truss Gasket Screw 4 x 10	09-14144-00	

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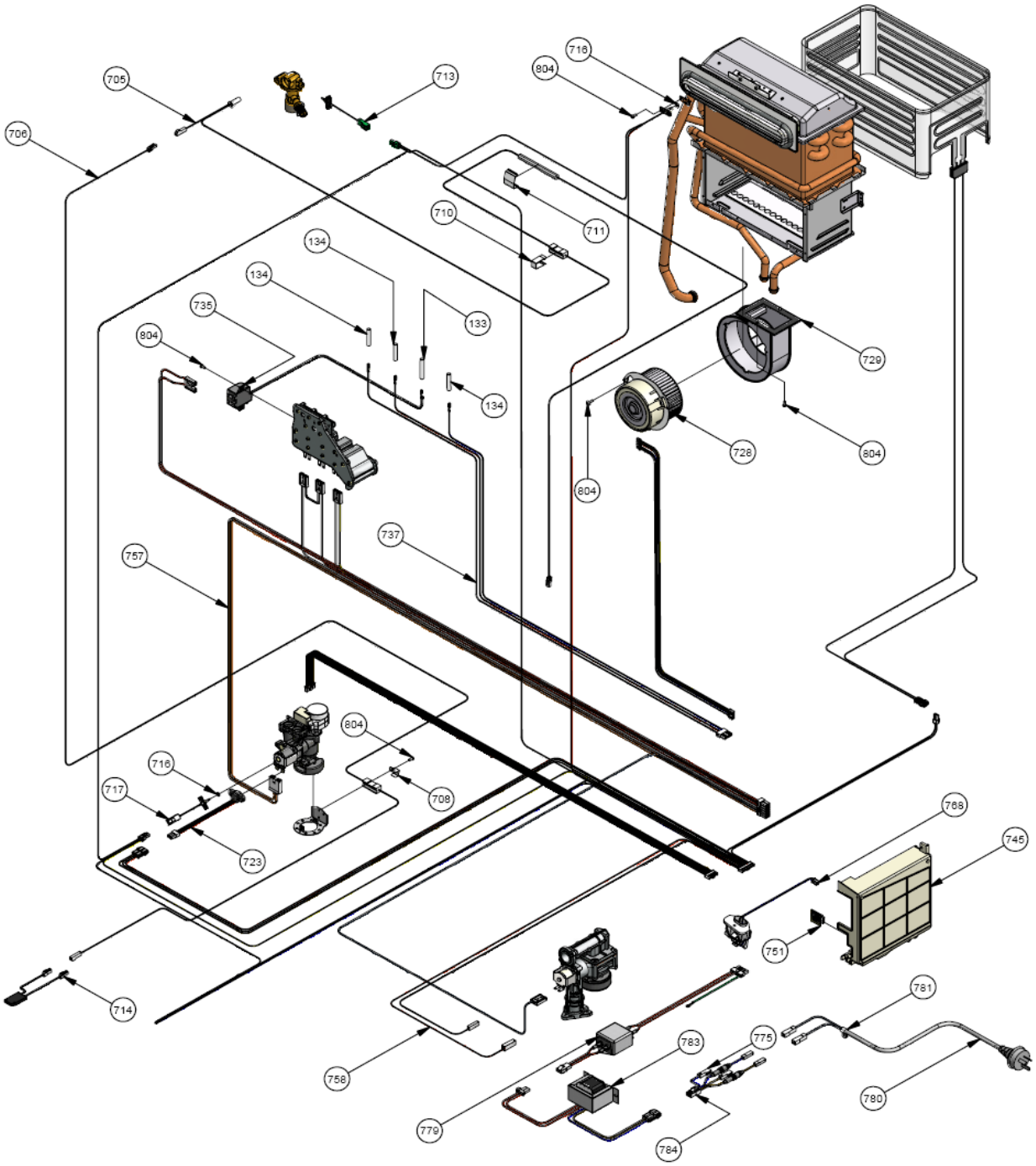
Exploded View 6 - 871024-C & 875024-C Models

Fitted with solenoid operated bypass



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Replacement Parts List Exploded View 6 - 871024-C & 875024-C Models

Fitted with solenoid operated bypass

Item No	Description	875024-C	871024-C
133	Silicone Tube (Insulator)	20-43376-00	
134	Silicone Tube (Insulator)	20-43376-00	
705	Anti-Frost Heater (Heater A)	31-71644-00	
706	Anti-Frost Heater Assembly (Heater B)	31-71643-00	
708	Anti-Frost Heater Clamp	WH0020049	
710	Anti-Frost Heater “C” Clamp (for Heater A)	WH0020050	
711	Anti-Frost Heater Clamp (for Heater B)	WH0020051	
712	Ambient Air Temp Thermistor Assembly	N/A use *31-76655-00	
713	Outlet Thermistor (Thermistor B)	*20-64774-00	
714	Anti Frost Thermostat Assembly	20-57072-00	
715	Heat Exchanger (HX) Thermistor	N/A use *31-76655-00	
716	O-ring – Thermistor	WH0020055	
717	Inlet Thermistor (Thermistor A)	*20-64773-00	
723	Hall Effect I.C. Assembly	*20-43805-00	
728	Combustion Fan	WH0020057	
729	Fan Case Assembly	10-88629-00	
735	Ignition Pack	31-76722-00	
737	Flame Sensor Loom	31-76721-00	
745	PCB Assembly	31-76623-0S	
751	Gas Type Connector - NG	31-76594-00	31-76592-00
	Gas Type Connector - LP	31-76593-00	31-76591-00
757	100 volt loom	31-76653-00	
758	Signal Loom (inc amb air & HX thermistor)	*31-76655-00	
768	Terminal Block Assembly	WH0020068	
771	Noise filter holder assembly	31-23360-00	
773	Power filter	*31-71642-00	
775	Fuse – In line **Note:** PCB fuses not fitted	WH0020069	
780	Power Cord With Clamp	*31-76652-00	
781	Clamp – Power Cord	WH0020072	
783	240 -110 Volt Transformer Assembly	*31-71646-00	
784	Connecting cord	*31-71641-00	

Not Shown	Gas Conversion - LP to NG	Lower Burner Assy	31-76241-00	
		Gas Type Connector	31-76594-00	31-76592-00
		Nozzle Plate	31-76238-00	
		Nozzle Plate Bind Screw (3 required)	09-46131-00	
Not Shown	Gas Conversion - NG to LP	Lower Burner Assy	31-76240-00	
		Gas Type Connector	31-76593-00	31-76591-00

*When installed in 871024 & 875024 model heaters these parts will require the replacement of other interconnecting components. Refer to ‘Product Changes’ on page 10 and ‘Parts Replacement Scenarios’ on page 11 for more information.

Note: For controller and controller cable part numbers refer to page 20.

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Gas Type Conversion Procedure

1. ***Isolate the power and gas supply to the water heater.***
2. Remove the front panel. (Refer to Procedure 1).
3. Remove the Burner Change Over Assembly (Refer to Figure 1 and Procedure 2).
4. Remove the Combustion Chamber Front Panel Assembly. (Refer to Figure 2 and Procedure 3).
5. Remove the Lower Burner Assembly, (Refer to Figure 3 and Procedure 4).

NG - Propane

6. ***Remove and discard Nozzle Plate and nozzle plate screws – Models ending with C suffix only (Refer to figure 3 and Procedure 23).***
7. Fit replacement Propane lower burner assembly.

Propane - NG

6. ***Install Nozzle plate and nozzle plate screws – models ending with C suffix only (Refer to figure 3 and Procedure 23).***
7. Fit replacement NG lower burner assembly.

8. Refit the Combustion Chamber Front Panel Assembly.
9. Refit the Burner Change Over Assembly.
10. Remove the Gas Type Connector, (Refer to Figure 4 and Procedure 17) and refit replacement for required gas type and water heater capacity.
11. Restore the power and gas supply.
12. ***Using an insulated tool, adjust the minimum and maximum burner gas pressures (Figure 5) to that required for the size, model and gas type (refer to specifications table on page 4) following the Burner Gas Pressure Adjustment procedure on page 56.***
13. ***Fit the correct gas type label and alter the test point pressures on the rating label to reflect the new gas type.***

Figure 1

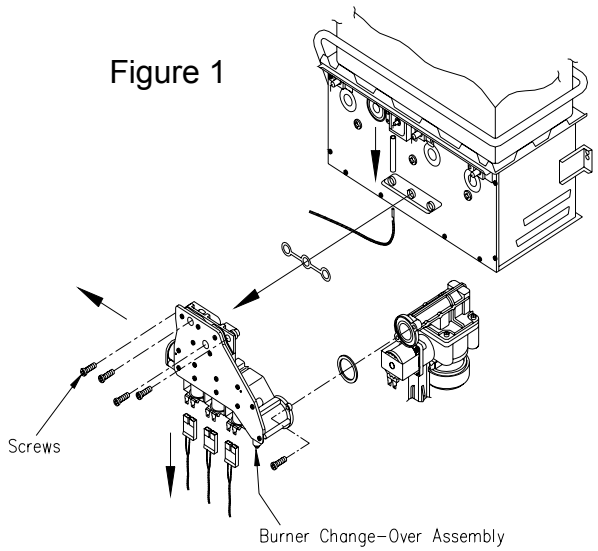

Figure 2

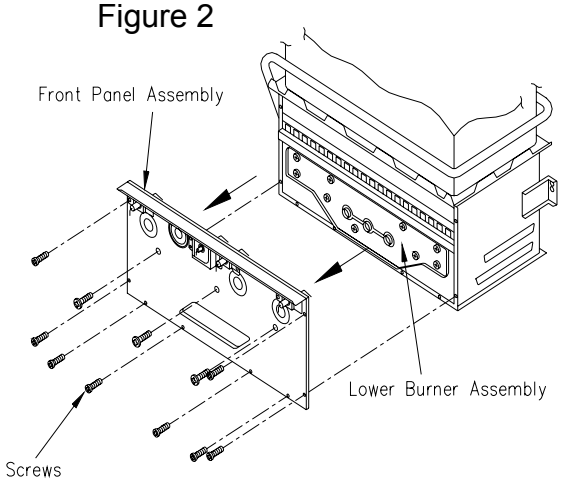

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Figure 3

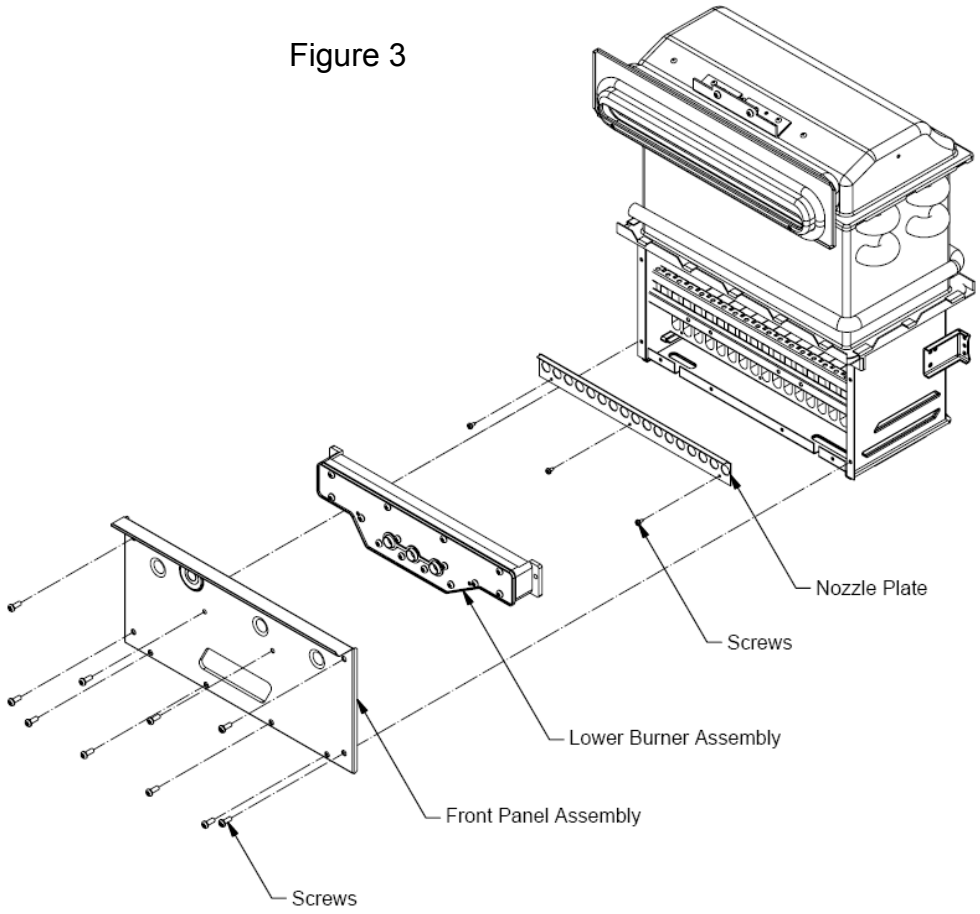


Figure 4

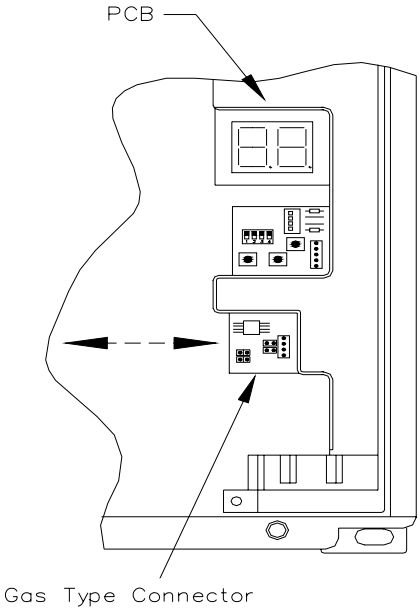
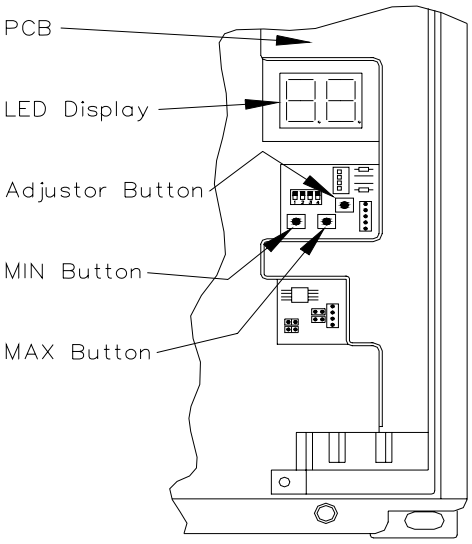


Figure 5



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Electronic Instantaneous Gas Water Heater Warranty (Australia only)

Warranty conditions

1. This warranty is applicable only to water heaters manufactured from 1st January 2001.
2. The water heater must be installed in accordance with the Rheem water heater installation instructions, supplied with the water heater, and in accordance with all relevant statutory and local requirements of the State in which the water heater is to be installed.
3. Where a failed component or water heater is replaced under Warranty, the balance of the original warranty period will remain effective. The replaced part or water heater does not carry a new warranty.
4. Where the water heater is installed outside the boundaries of a metropolitan area as defined by Rheem or further than 25 km from a regional Rheem Service branch office, or an Accredited Service Agent, the cost of transport, insurance and travelling costs between the nearest Rheem Service Accredited Service Agent's premises and the installed site shall be the owner's responsibility.
5. The warranty only applies to the water heater and original or genuine company component replacement parts and therefore does not cover any plumbing or electrical parts supplied by the installer and not an integral part of the water heater, eg. pressure limiting valve; isolation valves, non-return valve, electrical switches, pumps, or fuse.
6. The water heater must be sized to supply the hot water demand in accordance with the guidelines in Rheem water heater literature

Warranty Exclusions

1. REPAIR AND REPLACEMENT WORK WILL BE CARRIED OUT AS SET OUT IN THE RHEEM ELECTRONIC INSTANTANEOUS WATER HEATER WARRANTY ABOVE, BUT THE FOLLOWING EXCLUSIONS MAY CAUSE THE WATER HEATER WARRANTY TO BECOME VOID, AND MAY INCUR A SERVICE CHARGE AND COST OF PARTS.

a) Accidental damage: Acts of God, failure due to misuse; incorrect installation; attempts to repair the water heater other than by a Rheem Accredited Service Agent or the Rheem Service Department.

b) Where it is found there is nothing wrong with the water heater, where the complaint is related to excessive discharge from the temperature and pressure relief valve due to high water pressure; where there is no flow of hot water due to faulty plumbing; where water leaks are related to plumbing and not the water heater components; where there is a failure of gas, electricity or water supplies; where the supply of gas, electricity or water does not comply with relevant codes or acts.

c) Where the water heater or water heater component failed directly or indirectly as a result of: excessive water pressure; excessive temperature and/or thermal input; corrosive atmosphere; ice formation in the pipework to or from the water heater; ice formation in the water ways of a water heater without a frost protection system; ice formation in the waterways of a water heater with a frost protection system where the electricity supply has been switched off or has failed and the water heater has not been drained in accordance with the instructions; ice formation in the waterways of a water heater with a frost protection system due to an ambient temperature below -20ºC (including wind chill factor)

d) Where the water heater is located in a position that does not comply with the Rheem water heater installation instructions or relevant statutory requirements, causing the need for major dismantling or removal of cupboards, doors or walls, or use of special equipment to bring the water heater to floor level, or to a serviceable position.

e) Repairs to the water heater due to scale formation in the waterways when the water heater has been connected to a harmful water supply as outlined in the Owner's Guide and Installation Instruction booklet.

2. SUBJECT TO ANY STATUTORY PROVISIONS TO THE CONTRARY, THIS WARRANTY EXCLUDES ANY AND ALL CLAIMS FOR DAMAGE TO FURNITURE, WALLS, FOUNDATIONS OR ANY OTHER CONSEQUENTIAL LOSS EITHER DIRECTLY OR INDIRECTLY DUE TO LEAKAGE FROM THE WATER HEATER.

In addition to this warranty, the Trade Practices Act 1974 and similar laws in each state and territory provide the owner under certain circumstances with certain minimum statutory rights in relation to your Rheem water heater. This warranty must be read subject to that legislation and nothing in this warranty has the effect of excluding, restricting those rights.

NOTE: Every care has been taken to ensure accuracy in preparation of this publication. No liability can be accepted for any consequences which may arise as a result of its application.

Rheem Australia Pty Ltd ABN 21 098 823 511

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Document Revision History

Title:	Integrity 24L Service Instructions	Document Number:	TM031

Revision	Details of change	D.O.I.
A	Service Manual Issued for 24L Integrity	10/07

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